Exhibit 4

PLAINTIFFS' OPPOSITION TO DEFENDANTS' MOTION TO EXCLUDE PLAINTIFFS' EXPERTS' GENERAL CAUSATION OPINIONS FOR FAILURE TO ACCOUNT FOR SECTION 230 AND THE FIRST AMENDMENT

In re Social Media Adolescent Addiction / Personal Injury Products Liability Litigation, Case No. 4:22-MD-03047-YGR

EXPERT REPORT OF SANDEEP CHATTERJEE, PH.D.

DATE: JULY 9, 2025

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1. I, Sandeep Chatterjee, Ph.D., submit the following Expert Report ("Report") on behalf of Snap Inc. ("Snap") in the aforementioned matter.

I. EXECUTIVE SUMMARY

2. As I explain in detail below, based on my substantial experience designing, architecting, and developing software and complex computing systems, including distributed computing[1] systems and networked systems, as well as my extensive investigation and examination of materials related to the planning and development of Snapchat, I conclude that Snap has used reasonable and prudent software design and development practices in developing the Snapchat app. Indeed, Snap goes to significant lengths beyond what is the industry norm to ensure that its users have a positive experience using Snapchat and to improve on users' experience over time.

3. In particular, I have reached the following conclusions regarding the design and development of Snapchat:

   (1) **Snap Employs a Structured, Industry-Standard Development Process**. Snap's software engineering and product development processes are consistent with best practices in the technology industry. The company applies a disciplined approach, including requirements analysis, design, implementation, testing, and maintenance. Its methodology incorporates cross-functional input from engineering, product management, safety, privacy, and legal teams, and is informed by both internal review and external advisory bodies.

[1] "Distributed computing" or "distributed processing" generally refers to "[a] form of information processing [or computing] in which work is performed by separate computers linked through a communications network." Microsoft Computer Dictionary (5th Ed. 2002), pp. 167–168.

(2) **Snapchat's Design Reflects a Responsible and Proactive Approach**. Snap has embedded safety considerations into the product lifecycle through its Safety-by-Design Framework, trust and safety protocols, and user research initiatives. Features are developed and launched through a process that includes A/B testing, phased rollouts, risk assessments, and monitoring for unintended consequences.

(3) **The Specific Features Criticized by Plaintiffs Are Reasonably Designed**. The features criticized by Plaintiffs and Plaintiffs' experts—such as Discover and Spotlight, Notifications, Streaks, Snap Map, Find Friends/Quick Add, Lenses, and Ephemerality—have been developed with deliberate attention to usability, safety, and user agency. In each case, Snap has implemented thoughtful design choices, meaningful user controls, and appropriate mitigations in response to risks.

(4) **Snapchat Reflects Reasonable Tradeoffs Between Engagement, Safety, and Technical Feasibility**. Snap's design choices—such as opening the app to a camera rather than a content feed, emphasizing ephemerality, and allowing granular notification control—demonstrate a principled commitment to well-being, privacy, and authenticity, even where these choices may reduce engagement or growth.

(5) **Plaintiffs' Experts Mischaracterize Snapchat's Functionality**. Plaintiffs' experts often disregard the structural safeguards, user protections, and design constraints Snap has put in place, and fail to account for the technical realities of operating a large-scale communications platform. Their critiques overlook or minimize the steps Snap has taken to reduce risk and support user choice.

4. These conclusions are supported by the analysis below and reflect my independent and objective assessment of Snapchat from a software engineering and design perspective.

II. EXPERIENCE AND BACKGROUND

5. I have been developing computer hardware and software systems for almost thirty years. Currently, I am the Chief Executive Officer of Experantis LLC, a technology consulting company. Previously, I was a co-founder, Executive Vice President and Chief Technology Officer of SourceTrace Systems, Inc., a technology and services company enabling the delivery of secure remote electronic services over landline and wireless telecommunications networks.

6. I received my bachelor's degree in Electrical Engineering and Computer Science from the University of California, Berkeley in 1995. I received my master's degree in Computer Science from the Massachusetts Institute of Technology (MIT) in 1997, and my doctorate in Computer Science from MIT in 2001. I received a certificate of completion for an executive education program on global leadership from Harvard University in 2011.

7. My doctoral dissertation at MIT, entitled "Composable System Resources for Networked Systems," involving networked and distributed computer systems and architectures,[2] was selected as one of the top inventions in the history of MIT's Laboratory for Computer Science. This invention is showcased in a time capsule at the Museum of Science in Boston, Massachusetts. Other recipients of this honor include Bill Gates, the founder of Microsoft, and Tim Berners-Lee, the inventor of the World Wide Web.

8. In 2011, I was named a Young Global Leader. This honor, bestowed each year by the World Economic Forum, recognizes and acknowledges the top leaders—all below the age of 40—from around the world for their professional accomplishments, commitment to society, and

[2] Computer architecture generally refers to the design and interaction between software and/or hardware technologies and components that form a computer system.

potential to contribute to shaping the future of the world. In 2016, I was appointed to the World Economic Forum's expert network as an expert in technology and innovation.

9. From 1997, I was the Entrepreneur-in-Residence at FidelityCAPITAL, the venture capital arm of Fidelity Investments. In 1999, I founded and served as President and Chief Technology Officer (CTO) of Satora Networks, which developed tools and technologies for building appliances and services for the Internet using wireless and other technologies to extend it beyond the desktop.

10. In 2001, I joined Bluestone Software's Mobile Middleware Labs as a Senior Engineer developing applications and systems infrastructure for enterprise Java/J2EE, Web services, and enterprise mobile solutions. After the completion of Hewlett-Packard's (HP) acquisition of Bluestone, I became a Senior Member of the Technical Staff at HP's Middleware Division. I was responsible for architecting and developing the company's next-generation Web services platform for enterprise as well as mobile environments, known as the Web Services Mediator.

11. I was part of the Expert Group that developed the JSR-00172 J2ME (Java 2 Platform, Micro Edition) Web Services Specification,[3] the worldwide industry standard for mobile Web services. I am the co-author, with James Webber, of the book "Developing Enterprise Web Services: An Architect's Guide" (published by Prentice-Hall in 2004).[4] This book sets forth many of the best practices for developing and maintaining modern software systems, and has been adopted by over 100 universities and colleges around the world as well as major

[3] *See* JSR 172: J2ME™ Web Services Specification, https://jcp.org/en/jsr/detail?id=172 [as of July 8, 2025].

[4] *See* Sandeep Chatterjee & James Webber, *Developing Enterprise Web Services: An Architect's Guide* (New Jersey: Prentice Hall PTR, 2004).

companies. The book has also been translated or reprinted in a number of countries around the world.

12. I have significant experience in developing complex computing systems, including systems for banking and financial services. For example, through a contract between HP and the United States Agency for International Development (USAID), I architected and led the development of one of the first mobile banking solutions. This system enabled customers to use their mobile phones and other wireless handsets to connect with the core banking systems of banks and other financial institutions, and perform transactions without having to travel to bank branches. This system supported many banking transactions, including loan applications, loan disbursement, and loan repayments.

13. Later, after SourceTrace Systems' acquisition of this technology, I led the expansion of this solution into multiple countries and into multiple industries. Banks and other financial services companies utilized this technology to make their tellers more efficient, to provide self-service kiosks within branches, and to provide remote access to banking services. Additionally, through our licensing agreement with Telefonica, one of the largest cellular and telecommunications companies in the world, this solution was deployed in various other industries, including logistics management and customer relationship management. Bloomberg Television selected and featured this technology and the company I co-founded to commercialize this technology on Bloomberg TV's "Bloomberg Innovators" program.

14. I have been a retained expert witness for various disputes that involved significant technology issues, and I have been qualified as a technology expert by U.S. District and State Courts, including in California, Delaware, Florida and Texas in technology areas that are relevant to this case, including but not limited to: computer software systems, distributed

computing systems, and mobile and wireless systems. I have previously testified through declaration or expert report, at deposition and at trial in numerous intellectual property and commercial litigation matters, including for patent litigation, copyright and trade secret misappropriation litigation, and contract dispute cases. I have submitted more than one hundred and ninety expert declarations and expert reports, testified at deposition more than ninety-five times, and testified at trial or at hearings at least seventeen times. I have been identified as one of the top 1000 patent professionals in the world, and am listed in the IAM Patent 1000, which identifies the world's leading patent litigation and prosecution attorneys, as well as damages and technology expert witnesses. I have attached a more detailed list of my qualifications as **Appendix A** to this Report, which contains my curriculum vitae, including my publications, and a listing of cases from the last 5 years in which I have testified through expert report, declaration, deposition or trial (**Appendix A-1**). Based on my academic and professional experiences, I believe that I am qualified in the technology fields and technology issues relevant to this matter. I have applied the same rigor to this matter as I apply to my own research, and I hold my opinions presented in this report to a reasonable degree of scientific certainty.

15. Experantis LLC is being compensated for my time on this matter at my standard hourly rate of $895 and reimbursed for any expenses that I incur related to my work in this matter. Neither Experantis LLC nor I have any financial interest in the outcome of this matter. Experantis LLC will be paid for my time regardless of the outcome of this matter, and my compensation does not depend in any way on the substance of my opinions or testimony in this matter.

16. I reserve the right to supplement my opinions based on new or different information learned

after the date of this report.

17. I understand that I may be asked to provide testimony at deposition or trial in this case and am prepared to do so.

18. The undersigned hereby certifies their understanding that they owe a primary and overriding duty of candor and professional integrity to help the Court on matters within their expertise and in all submissions to, or testimony before, the Court. The undersigned further certifies that their report and opinions are not being presented for any improper purpose, such as to harass, cause unnecessary delay, or needlessly increase the cost of litigation.

III. SCOPE OF ASSIGNMENT; EXECUTIVE SUMMARY OF OPINIONS; AND INFORMATION CONSIDERED

A. Scope of Assignment

19. I have been retained as an independent consultant through Experantis LLC ("Experantis") by the law firm of Munger, Tolles & Olsen LLP ("Counsel"), as counsel for Snap. Counsel has asked me to review documents and information related to Snap's development of its Snapchat mobile app and associated systems (collectively, "Snapchat"), and opine on whether Snapchat has been developed reasonably and consistent with standard software development industry practices. As part of this assignment, I was asked to assess certain of Plaintiffs' experts' opinions regarding the design and development of the Snapchat application and specific features such as Snapchat's Discover and Spotlight feeds, Notifications, Streaks, Snap Map, Find Friends (formerly Quick Add), Lenses, ephemerality, and reporting mechanisms.

B. Information Considered

20. I have considered information from various sources in forming my opinions. Besides drawing from nearly three decades of research and development experience in the area of

software and distributed computing systems, I conducted an extensive investigation and analysis of documents and other materials related to Snapchat that were produced in this matter, as well as discovery responses, deposition transcripts and exhibits, and publicly available materials.

21. **Appendix B** to this Report provides a further description of the materials I have considered, in addition to those materials referenced or cited herein.

C. Legal Context

22. I am not an attorney, and my understanding of the relevant laws is based on information provided to me by Counsel. I understand that one of the legal issues in this case is whether Snap has acted reasonably in designing and developing Snapchat. My assessment of the reasonableness of Snap's practices is based on an analysis of how those practices compare to those of a reasonably prudent software development entity, especially in the context of designing and developing an app that is broadly available and used by millions of users.

IV. METHODOLOGY

23. In preparing my opinions, I reviewed Snapchat features Plaintiffs have alleged are harmful in their Complaint. In evaluating those features, I looked at internal Snap documents that have been produced in this litigation, as well as testimony from current and former Snap employees and publicly available documents. I also conducted research into design and development processes for other software and digital platforms and drew upon my knowledge and experience from decades of working in software and app development. This is the same methodology that I typically have used when developing, designing, and working to improve software or applications throughout my career.

V. SNAP REASONABLY DEVELOPED AND DESIGNED SNAPCHAT

24. In the next sections, I provide a brief overview explaining how modern software systems are developed, tested, and maintained and then I apply the concepts discussed to Snapchat.

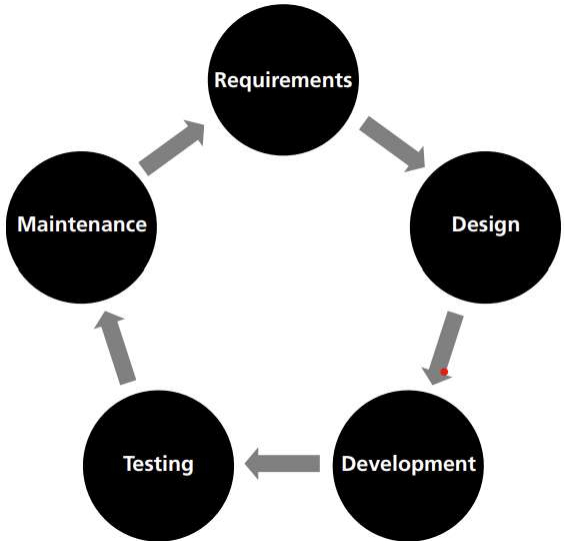
A. Background Regarding Software Development Process

25. In this section, I discuss the software design and development process used to develop mass market, cloud-based apps. While the specific implementation of this process varies from organization to organization based on factors such as the size and scale of the app, it is my opinion that the process outlined in this section reflects industry best practices for reasonable app development.

26. Developing a software application[5] involves more than just writing the code. Various other activities also need to be performed in the right order to develop a successful application. Collectively, these activities are known as application lifecycle management (ALM). Some of the activities that are part of the ALM process are shown in the figure below, including requirements, design, development, testing, delivery, and release management.[6]

[5] The software development process is the same for a new software application or a new feature or sub-system to an existing software application or system.

[6] John Wiley & Sons, Inc., Microsoft Official Academic Course, *Software Development Fundamentals* (2012), p. 66.



27. The application (or feature) lifecycle starts when the need for a new software application (or a new feature) is identified. A business manager (or equivalent, though specific titles for this role and others discussed below differ between organizations) is usually the person who is the sponsor of the project. He or she analyzes the need, checks how the project fits with the overall strategy of the business, arranges the funding, and initiates the staffing process for the project. A project manager (again, or equivalent, though the specific title may differ) is probably one of the first people hired by the business manager. The project manager is responsible for the overall execution of the project. His or her key responsibilities are to make sure that the project stays on budget and finishes on time. The project manager is also responsible for hiring team members and for facilitating cooperation within the team.[7]

1. Requirements

28. Requirements analysis is one of the most important steps in the application lifecycle. Precise, complete, well-documented requirements are critical to the success of the project. These

[7] *Id.*

requirements can be functional or nonfunctional. Functional requirements specify exactly what the system is designed to accomplish. In contrast, nonfunctional requirements are quality requirements such as scalability, security, reliability, and so on. A business analyst is responsible for analyzing business needs and converting them into requirements that can be executed by the development team.[8]

29. The requirements analysis activity takes into account many different objectives. For example, these objectives may include user safety, ease of use, positive user experience, privacy of user information, and data security. Other objectives may include revenue generation mechanisms and goals or targets for level of use. It is common for requirements to address more than one of these objectives.

2. Design

30. The design process generates detailed technical specifications that will be used for developing the system. The output of the design process is a set of technical models and specifications that provide guidance to the developers and other team members during the software development activity. The output of the design process is more abstract than concrete. At this point, no real system exists that you can interact with.[9]

31. As part of the design activity, decisions are made as to how to implement the requirements (from the requirements activity) in both the user-facing experience as well as in the algorithms and logic that run in the backend or server. These decisions oftentimes require balancing factors such as engineering time and/or cost, available server resources, interactivity speed perceived by the user, security, platform capabilities, etc. For example,

[8] *Id.* at p. 67.

[9] *Id.*

implementing certain algorithms or logic may require more engineering time than what is available or slow down the interactive speed perceived by the user.

32. Some of the most important participants in this stage of the ALM process include an architect and a user-experience designer (here, as elsewhere, the specific titles for those playing these roles may differ):

(a) Architect: An architect designs the technical blueprint of the system. This includes identifying components and services, their behavior, and how they interact with each other and with the external world.

(b) User-experience designer: A user-experience designer creates the user experience of the system. This includes designing the user interface (UI) elements; designing navigation between various forms, screens, or pages; and so on.[10]

3. Development

33. Software development is the portion of the ALM process in which the business requirements are implemented in working code based on the design that was created in the previous activity. At the end of this activity, you have concrete output in the form of a software system with which users can interact.[11]

34. Critical participants in software development include the following:

(a) Developers: Developers write code based on the requirements gathered by the business analyst, the architecture laid down by the architect, and the user experience developed by the user-experience designer.

[10] *Id.*

[11] *Id.*

(b) Database administrators (DBAs): DBAs are responsible for implementation and maintenance of the software's databases. DBAs also plan for data integrity, security, and speed.

(c) Technical writers: Technical writers develop the system manuals and help files (or other, similar documentation) that will be delivered along with the application.

(d) Content developers: Content developers are subject matter experts who develop the content for the system, to the extent necessary. For example, if the application is a movie review website, just deploying the website is not enough—you also need to make sure that the site has enough content to gather user interest.[12] With regard to social media platforms, third-party users serve as the content developers rather than internal company employees.

4. Testing

35. Software testing is used to assure the quality of the final product. Testing can identify possible gaps between the system expectations described in the requirements document and actual system behavior.[13]

36. There are many different types of testing that are common in software development, including:[14]

[12] *Id.*

[13] *Id*. at p. 68.

[14] Pittet, *The different types of software testing*, https://www.atlassian.com/continuous-delivery/software-testing/types-of-software-testing [as of July 7, 2025].

(a) Unit tests are very low level and close to the source of an application. They consist in testing individual methods and functions of the classes, components, or modules used by your software.

(b) Integration tests verify that different modules or services used by your application work well together.

(c) End-to-end testing replicates a user behavior with the software in a complete application environment.

(d) User acceptance tests (also sometimes referred to as acceptance tests) are formal tests that verify if a system satisfies business requirements.

(e) Performance tests evaluate how a system performs under a particular workload. These tests help to measure the reliability, speed, scalability, and responsiveness of an application.

37. Among the most critical participants in the software testing activity are the testers who verify the working application to make sure that it satisfies the identified requirements. When these testers identify any defects in the application, they assign each defect to an appropriate person who can fix it. For example, a code defect would be assigned back to a developer so he or she could remedy the error.[15]

38. Once a software has been tested, it is often released to a small number of select users to ensure there are no critical bugs, negative user reactions, or other implications. This is usually referred to as a "canary release." Testing logs and telemetry data are analyzed from the canary release to ensure that there are no negative results.

[15] John Wiley & Sons, Inc., *Microsoft Official Academic Course, Software Development Fundamentals* (2012), p. 68.

5. Maintenance

39. Release management includes activities such as packaging and deploying the software, managing software defects, and managing software change requests. Change requests can be related to identified software defects or desired new features. Accordingly, most software evolves over time as it is improved. Sometimes this evolution is driven by issues identified by the software developer (company) or by feedback provided by users.

40. Major players in the release management activity include the following individuals:

(a) Release manager: The release manager coordinates various teams and business units to ensure timely release of a software product.

(b) Operation staff: The operation staff members make sure that the system is delivered as promised. This could involve burning DVDs and shipping them as orders are received, or it could entail maintaining a Software as a Service (SaaS) system or other software system on an ongoing basis. Operation staff are also responsible for releasing any system updates (e.g., bug fixes or new features).

(c) Technical support staff: These staffers interact with customers and help solve their problems with the system. Technical support can generate valuable metrics about what areas of the system are most difficult for users and possibly need to be updated in the next version of the application.[16]

B. User Interface Design

41. User interface design is a subset of a field of study called *human-computer interaction* (HCI). Human-computer interaction is the study, planning, and design of how people and computers work together so that a person's needs are satisfied in the most effective way. HCI designers

[16] *Id.*

must consider a variety of factors: what people want and expect, what physical limitations and abilities people possess, how their perceptual and information processing systems work, and what people find enjoyable and attractive. Designers must also consider technical characteristics and limitations of the computer hardware and software.[17]

42. The *user interface* is the part of a computer and its software that people can see, hear, touch, talk to, or otherwise understand or direct. The user interface has essentially two components: input and output. Input is how a person communicates his or her needs or desires to the computer. Some common input components are the keyboard, mouse, trackball, one's finger (for touch-sensitive screens or pads), and one's voice (for spoken instructions). Output is how the computer conveys the results of its computations and requirements to the user. Today the most common computer output mechanism is the display screen, followed by mechanisms that take advantage of a person's auditory capabilities: voice and sound. The use of the human senses of smell and touch output in interface design still remain largely unexplored.[18]

43. Proper interface design provides a mix of well-designed input and output mechanisms that satisfy the user's needs, capabilities, and limitations in the most effective way possible. The best interface is one that is "not noticed, and one that permits the user to focus on the information and task at hand instead of the mechanisms used to present the information and perform the task."[19]

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[17] Wilbert O. Galitz, *The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques* (3rd Ed. 2007), p. 4.

[18] *Id.*

[19] *Id.*

44. A user interface, as described above, is a collection of techniques and mechanisms to interact with something. In a graphical interface, the primary interaction mechanism is a pointing device of some kind. This device is the electronic equivalent to the human hand. What the user interacts with is a collection of elements referred to as objects. They can be seen, heard, touched, or otherwise perceived. Objects are always visible to the user and are used to perform tasks. They are interacted with as entities independent of all other objects. People perform operations, called actions, on objects. The operations include accessing and modifying objects by pointing, selecting, and manipulating. All objects have standard resulting behaviors.[20]

45. Graphic presentation of information utilizes a person's information-processing capabilities much more effectively than other presentation methods. Properly used, it reduces the requirement for perceptual and mental information recoding and reorganization, and also reduces the memory loads. It permits faster information transfer between computers and people by permitting more visual comparisons of amounts, trends, or relationships; more compact representation of information; and simplification of the perception of structure. Graphics also can add appeal or charm to the interface and permit greater customization to create a unique corporate or organization style.[21]

1. User Interface Design Principles

46. One of the key principles of user interface design—across all contexts, including computers, mobile devices, and even pre-digital interfaces—is efficiency. This principle has been an important part of user interface design since the invention of digital systems (and even before

[20] *Id.* at p. 16.

[21] *Id.* at p. 17.

digital systems, were key parts of how non-digital interfaces, such as newspapers and magazines, were designed).

47. Designing for efficiency requires designers to endeavor not to have wasted eye and hand movements. A user's attention should also be captured by relevant elements of the screen when needed. Sequential eye movements between screen elements should be predictable, obvious, and short. Web pages or portions of mobile apps must be easily scannable. All navigation paths should be as short as possible. Manual transitions between various system controls should also be as short as possible. Efforts should be made to avoid frequent transitions between input devices such as the keyboard and mouse and to try to anticipate the user's wants and needs. At each step in a process, the user should be presented with all of the information and tools needed to complete the process; the user should not be required to search for and gather necessary information and tools.[22]

2. Good User Interfaces Reduce "Friction"

48. User interface friction is the resistance imposed upon a user-guided process through the way the user interface reacts. It has nothing to do with functionality: the term User Interface Friction is used to define the difference in fluidity and productivity that can be observed when performing the same operation on different computer systems, programs or devices. User interface friction is inherent in any modern, menu-driven computer system, and depends on a number of aspects, ranging from the speed at which the computer displays a menu or sub-menu, to the efficiency of the mouse.[23]

49. Some examples of user interface friction include:

[22] *Id.* at p. 50.

[23] Pfeiffer Consulting, *User Interface Friction Research Report* (2006), p. 26.

(a) Having to wait, even a little bit, for a menu or submenu to be displayed is one of the main factors that can result in measurable productivity loss;

(b) Mouse operation, particularly in operations that require precision, that, for example, can slow down selecting sub-menus;

(c) Ambiguous icons, convoluted or unclear explanations can create hesitation and slow-down. A well-thought-out, clearly presented hierarchy of options, on the other hand can reduce User Interface Friction and increase productivity a user efficiency.[24]

50. User interface friction depends on a variety of factors that often occur in parallel and can result in significant slowdown of the user. Accordingly, good user interface design seeks to minimize friction.

3. Digital Natives, such as Gen-Z, Have Heightened Requirements for Technology and User Interfaces

51. "Digital natives" are generally understood to refer to people, who throughout most or all of their lives, have had a pervasive integration of digital technologies into various aspects of life and work. Unlike previous generations that witnessed the gradual adoption of digital tools, the digital natives have grown up with technology as an inherent and integral part of their daily experiences.[25]

52. Digital natives, also referred to as Generation Z, typically exhibit a natural proficiency in using digital devices, applications, and online platforms. They adeptly use technology for

[24] *Id.* at p. 27.

[25] *See, e.g.*, Techstep, *The Rise of the Gen Z Workforce: Addressing Mobile Technology Needs of Digital Natives* (Jan. 16, 2024) https://www.techstep.io/articles/the-rise-of-gen-z-workforce-addressing-mobile-technology-needs-of-digital-natives.

communication, collaboration, and problem-solving, having been exposed to digital tools from an early age. These individuals often embrace a tech-centric approach to tasks, seeking innovative solutions and efficiencies through the strategic application of digital resources.[26]

53. This digital-born generation thrives on connectivity, expecting a seamless transition between personal and professional digital experiences. Mobile technology serves as the pivotal link in this integration, facilitating continuous communication, collaboration, and access to information, regardless of time or place. Those seeking to attract this generation, such as employers and product designers, must invest in robust mobile networks and platforms to cater to this generation's desire for connectivity.[27]

54. Accordingly, since they may have never known a time without high-speed Internet, and a world of information, entertainment, and content options at their fingertips, digital natives or Gen Z expect easy access to content no matter what device they use—their phone, laptop, or tablet. Gen Z's relationship with technology from an early age means they have high user experience expectations. Gen Z are sensitive to friction when using devices and have a low tolerance for legacy tech issues.[28]

C. Snapchat's Software Design and Development Process Is Reasonable and Consistent with Best Practices

55. In this section, I discuss how Snap has applied the software design processes outlined in the previous sections.

56. Based on my review of Snap's internal documentation, design protocols, trust and safety

[26] *Id.*

[27] *Id.*

[28] See, e.g., Bhatia, *Gen Z: New Perspectives on Growing Up with Tech* (Feb. 23, 2021) https://www.linkedin.com/pulse/gen-z-new-perspectives-growing-up-tech-dilip-bhatia/.

frameworks, and user research practices, I conclude that Snap takes a responsible and proactive approach to product development.

57. Indeed, Snap has developed and evolved Snapchat using a mature, structured, and industry-aligned design and engineering process that reflects best practices in modern software development. This process includes iterative product design, extensive testing, robust internal review mechanisms, and deliberate deployment practices, all of which are indicative of a company that prioritizes user safety and experience, especially for teens.

58. Snapchat's product development lifecycle fits squarely within the framework outlined earlier in this report. As a communications platform used by individuals ranging from 13-year-olds to adults, Snap's designers and engineers routinely consider the intersection of usability, safety, privacy, and performance tradeoffs. Snap's design teams are supported by a cross-functional structure that incorporates product management, privacy engineering, data science, trust and safety, legal counsel, and senior leadership.

59. For example, Snap's Safety-by-Design Framework for Product Review Process outlines how safety considerations are built into the product lifecycle from concept through launch. This framework emphasizes transparency, age-specific safeguards, and anticipatory design that protects against known or foreseeable abuse vectors.[29]

60. Snap's safety-by-design framework contemplates that Snapchat features should "take into account the unique sensitivities of minors"; "[g]ive users controls and safety-related tools"; and, critically, "[c]onsider how products may create new vectors for abuse, or inappropriate behavior or content."[30]

[29] SNAP1350071.

[30] *Id.* at SNAP1350071–072.

61. In other words, Snap has not simply reacted to safety concerns, but has embedded a proactive safety-by-design framework that integrates Trust & Safety input into early-stage product development to ensure that "teams are designing 'safety' into the product."[31]

62. Reflecting this safety-by-design framework, one of Snap's key internal product planning documents through much of Snap's history—Quips—specifically includes sections to address "Safety Considerations" and "Privacy Considerations," reflecting the company's practice of building safety directly into product planning.[32]

63. Snap's development methodology reflects structured product management. Product managers and researchers at Snap draw on a variety of inputs including user research, platform data, policy considerations, and safety-focused external feedback in determining what features to develop and how to structure those features.

64. Examples of these structured inputs include: (1) Snap's Safety Advisory Board, an independent body of safety experts on which Snap has relied since 2018 to ensure its product development process is informed by external safety perspectives and feedback[33]; (2) the

[31] *Id.* at SNAP1350071; *see also* Transcript of the Deposition of Snap Witness Nona Yadegar, Dec. 16, 2024 ("Yadegar Deposition Tr.") at 127:20–128:17 (explaining that safety-by-design is a process "implemented at the product documentation and specification stage" to ensure that Snap takes safety into consideration when making design choices); Yadegar Deposition Tr. at 396:24–397:12 (similar); Transcript of the Deposition of Snap Witness Joseph Boniakowski, Mar. 20, 2025 ("Boniakowski Deposition Tr.") at 397:19–398:7 (similar).

[32] *See* SNAP1350071 at -072 ("[W]e're adding 'Safety Considerations' to the Quip template … in order to begin to condition product designers and engineers to think about building safety into the design of their products and features"); *see also, e.g.*, SNAP6361573 at -579.

[33] *Snap Safety Advisory Board*, https://values.snap.com/safety/safety-advisory-board [as of July 8, 2025]; *see also* Transcript of the Deposition of Snap Witness David Boyle, Apr. 2, 2025 ("Boyle Deposition Tr. Vol. 2") at 571:2–10 ("[W]e get feedback from external parties on product development … we have a safety advisory board that … meets regularly with our team, and members of [the Product] team join those safety advisory board meetings.").

Safety XFN, an internal group of cross-functional stakeholders at Snap—from the product, engineering, policy, legal, trust and safety, and communications teams, among others—that has been meeting on a biweekly cadence since 2019 to discuss and address safety issues from a variety of perspectives[34]; (3) Snap's Global Head of Platform Safety, Jacqueline Beauchere, who since 2021 has been helping bring additional external perspectives and feedback to the design and development process at Snap by serving as a liaison between the company and safety-focused outside stakeholders[35]; and (4) Snap's Council for Digital Well-Being, which launched in 2024 and consists of up to 18 teens from across the United States who opine on issues relating to online safety and wellbeing[36]. "[I]n short," as Nona Yadegar put it at her deposition, "safety is considered across the entire product development process, both through specific processes that are required for approval that all of the safety teams weigh in on, and from decisions like educating our team about these issues … ."[37]

65. Snap also conducts extensive A/B testing of product features. Features are tested for engagement, usability, and risk factors prior to launch. Snap has used A/B testing to specifically implement features that improve safety and usability for users.

66. This testing-based approach reflects an understanding that safety interventions must balance protective measures with user experience, especially on a communications platform where false positives can impair usability.

67. Following A/B tests, Snap uses phased deployment to surface real-world issues and adjust

[34] Yadegar Deposition Tr. at 398:11–400:1; Boniakowski Deposition Tr. at 458:3–464:7.

[35] Boniakowski Deposition Tr. at 461:4–19.

[36] *Snap's Council for Digital Well-Being*, https://values.snap.com/safety/cdwb [as of July 8, 2025].

[37] Yadegar Deposition Tr. at 396:12–17.

accordingly. Engineering and product teams monitor usage, user complaints, and safety metrics throughout rollout. This feedback loop allows Snap to catch edge cases that may not have surfaced during pre-launch testing and reflects best-in-class continuous deployment methodology.

68. Snap has developed feedback mechanisms to identify and respond to new risks. These include user reporting pathways, system-wide abuse trend monitoring, and real-time abuse dashboards. Snap consistently works to identify and address weaknesses in UX pathways that might limit abuse reporting in order to make reporting more accessible and actionable.[38] Reporting is available to users in-app as well as to users and non-users alike via the Snapchat website.[39]

69. Snap's safety cross-functional teams often participate directly in the product review process, collaborating closely with product counsel and other teams to advise on potential threats and risks before launch, based on current abuse trends.[40]

70. Snap's internal email correspondence confirms that safety is a priority in the Snapchat design process. CEO Evan Spiegel emphasized that safety is a prerequisite to the company's core mission of empowering self-expression and fun. As Spiegel noted, "We actually cannot

[38] Boniakowski Deposition Tr. at 474:2–17 (testifying that in-app reporting is continually improved based on user research and testing to make it "easier, and smoother, and higher fidelity"); SNAP2176867 at -868 (a "responsible growth initiative" to "make it easier to report abusive friend requests and/or abusive snaps/chats").

[39] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 41–42.

[40] SNAP1350071.

fulfill our mission unless people feel safe."[41]

71. Many safety settings are enabled by default for minors, including friending protections, search protections, and Content Controls in Family Center.[42] Family Center also provides parents oversight, allowing them to view their child's recent connections—with the child's consent.[43]

72. At times, Plaintiffs' experts seem to suggest that Snap should offer different software to different user demographics, namely minors.[44] Snapchat does offer minor users some additional or different options in connection with particular features. But to the extent that Plaintiffs' experts opine that Snap should offer an entirely separate software for minors, such an opinion ignores the realities of software development and implementation. As explained above, software development—including testing and maintenance—is a highly complex and intricate process. Accordingly, software companies usually do not have separate versions of their software for different demographics.

73. Like most companies, Snap instead reasonably maintains a single software, consistent with

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[41] SNAP4489318 at -319; *see also* Yadegar Deposition Tr. at 395:4–14 ("[A]t the end of the day, we're a business, and in order for us to be a successful business, our users need to feel excited and happy and positive about their experience on Snapchat. So aside from well-being being just a -- as a person in this world, a social issue and something that we -- that I believe is a big, important value, it wouldn't be good for our company or for the platform to be a place that didn't focus and have a sense of purpose as it relates to our users' well-being.").

[42] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 29, 51; *Additional Protections for Teens on Snapchat*, https://values.snap.com/privacy/teens [as of July 8, 2025]; see also Boyle Deposition Tr. Vol. 2 at 586:17–587:11 (testifying that for minors to be discoverable in Search, the searcher must have at least three mutual connections with the minor, a default setting that cannot be disabled).

[43] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 25.

[44] *See, e.g.*, Tim Estes Expert Report [5/16/2025] ("Estes Report [5/16/2025]") at 20 (opining that "Snap could have, and should have, turned [the Streaks feature] off for minors.").

standard industry practice, and Snap adds toggles that allow particular users to enable and disable certain features. For example, as discussed below, Snap offers users the ability to disable their discoverability in Snapchat's Find Friends (formerly Quick Add) feature, which prevents them from being suggested as potential friends to other users. Snap also offers extensive toggles related to notifications, discussed below as well. But this is not a be-all and end-all solution. Offering toggles generally adds clutter and confusion to the user interface, especially if there are many of them; indeed, adding too many toggles reduces the usefulness of all toggles. It is therefore a reasonable software development and design choice to limit the use of toggles, as Snap has done in designing Snapchat.

D. Snap Reasonably Developed and Designed the Snapchat Platform, Including the Features Criticized by Plaintiffs

74. Snap applied the above design process reasonably in developing and iterating on Snapchat over the years. Snapchat is a complex, highly scaled communications platform. With hundreds of millions of monthly active users and billions of Snaps, chats, and content views processed daily, even minor product changes can have massive, system-wide effects. The platform supports a global, real-time multimedia messaging architecture, which requires continual attention to latency, fault tolerance, memory constraints, and data minimization—especially across mobile devices operating on variable networks.

75. At this scale, what may appear from the outside to be a "simple fix" often carries significant downstream consequences. Design decisions must strike a careful balance between usability, security, performance, and safety.

76. Against this backdrop, Snap's specific product decisions—as discussed in more detail below—reflect a high degree of technical reasonableness. For example, the decision to isolate algorithmic content (Discover and Spotlight) into their own sections of the app

(known within Snapchat as tabs)—rather than showing them on app launch—reflects a deliberate tradeoff that prioritizes user control and moderation capacity over raw engagement growth.

77. Snap's design choices are not only the product of principled product philosophy but also a reflection of the real-world constraints of operating a global social communications platform. These choices were reasonable, proportionate to the risks involved, and consistent with the technical realities of large-scale app development.

78. The reasonableness of these design choices extends to the specific features that Plaintiffs claim are harmful or unreasonably designed, as discussed further below:

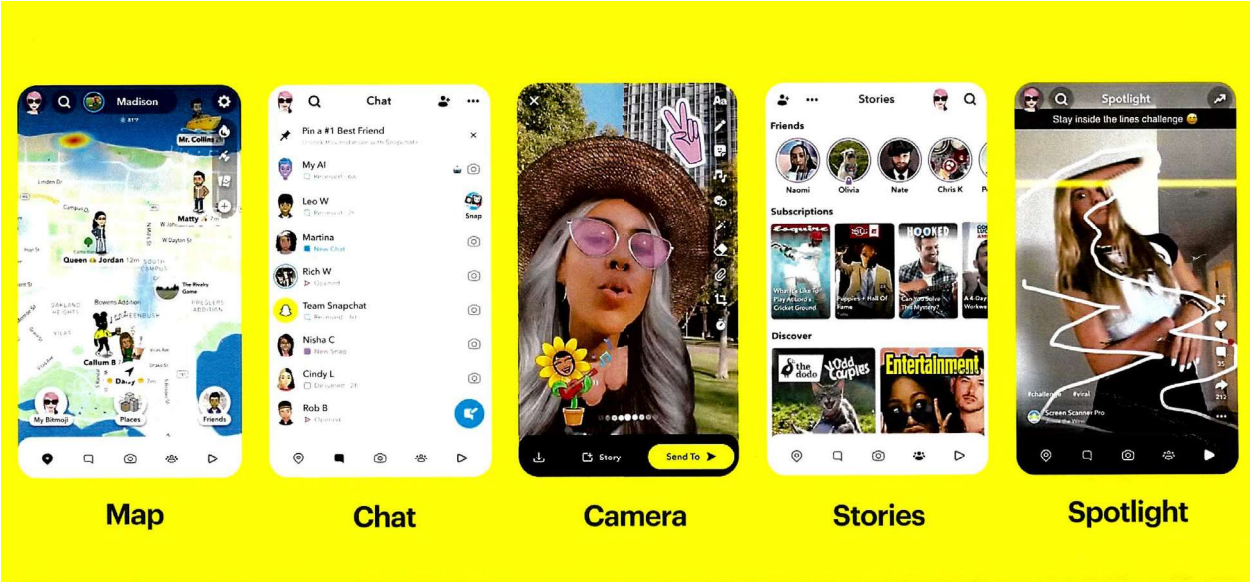
1. Spotlight and Discover Feeds

79. Snap's approach to algorithmic content feeds reflects thoughtful and responsible design choices aligned with its identity as a communication platform, not a content-first social media service.

80. Snapchat opens to the camera rather than to algorithmic content feeds. This core design decision underscores Snap's priority of encouraging spontaneous communication between friends over passive consumption of public content.[45] That choice promotes user agency and limits the immediate impact of algorithmic suggestions. As mentioned above, all steps that increase friction or require additional interaction by the user in order to use a particular portion of a product necessarily reduce the amount that portion of the product will be used.

[45] Yadegar Deposition Tr. at 157:13–23.

81. Spotlight and Discover (the portions of the Snapchat app that provide content feeds) exist on separate tabs within the Snapchat application. As illustrated below, the Snapchat application is comprised of five tabs: Camera (to which the app opens), Chat, Map, Stories (or Discover), and Spotlight.[46]



82. Users must actively navigate from the Camera tab that they first encounter to the Discover or Spotlight tabs to engage with algorithmically curated content in these portions of the Snapchat app.[47] Even when Snap temporarily implemented a simplified, three-tab design, the app still opened to the Camera tab, from which users had to navigate to the Content tab, which consolidated Spotlight, Stories, and For You (or Discover) content.[48]

83. Nona Yadegar testified at her deposition that this was an intentional choice: "[O]n Snapchat, when you open, it's to a camera … a really specific choice that might even be detrimental to growth, probably is, but the point of it is to immediately encourage communication and

[46] Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 27 .

[47] Yadegar Deposition Tr.at 250:4–251:14.

[48] *SPS 2024 | A New and Simple Snapchat* (Sept. 17, 2024) https://newsroom.snap.com/sps-2024-simple-snapchat.

creation … it's like an active experience rather than a passive consumption experience."[49]

84. Snap leadership has repeatedly emphasized that maximizing time spent is not the app's foundational objective. Instead, design decisions have centered on building meaningful connections with real friends, with content discovery as a secondary experience intended to complement and further the core mission of fostering connection, creativity, and communication.[50]

85. Deposition testimony and internal Snapchat data reflect that users spend far more of their time on the app communicating with friends than passively consuming content. For example, Snapchat usage data from the first quarter of 2025 indicates that 13 to 17 year old Snapchat users in the United States spent 78% of their time in the messaging and camera portions of the app and only about 11.77 minutes per day on average viewing content on Snapchat.[51] According to internal Snap documents, in the second quarter of 2023, users similarly spent 73% of their time on the app on either the Chat or Camera tabs of the platform (with chats accounting for 50% of users' time), with just 23% of time on the app having been spent on the Stories (or Discover) and Spotlight tabs.[52] Snap witnesses have likewise testified that users spend the majority of their time on the app communicating with friends instead of

[49] Yadegar Deposition Tr. at 157:16–23; *see also* Transcript of Deposition of Snap Witness Jacob Andreou, Apr. 11, 2025 ("Andreou Deposition Tr.") at 397:24–398:2 (explaining that the app opens to the camera "because that's where it all starts, and content creation as opposed to consumption is kind of the thing that we were by far most focused on.").

[50] Transcript of Deposition of Snap Witness Michael Weissinger, Dec. 18, 2024 ("Weissinger Deposition Tr.") at 305:19–306:4, 306:22–307:14; *see also* SNAP2970343 at -395.

[51] 2025 Usage Data Provided by Snapchat; Krista Hayakawa JCCP Expert Rebuttal Report at 2.

[52] SNAP7055556 at -594; SNAP1945809 (noting that time spent on Chat "is 2.5x that of the Stories tab").

passively consuming content.[53]

86. Nevertheless, algorithmic feeds serve a clear usability function: they help users discover relevant and interesting content from a vast pool of creators.[54] Without algorithmic curation, users would be overwhelmed trying to locate content among the hundreds of millions of posts shared each day. This sort of curation has long been a feature of not just digital apps but non-digital services (for example, newspapers sort stories by category and list them in order of likely interest).

87. Snap's approach to its algorithmic feeds reflects a commitment to providing useful content through Spotlight and Discover. As an initial matter, all content on Spotlight and Discover goes through moderation, with a combination of auto-moderation models and human moderators reviewing content to ensure that it is consistent with Snap's Community Guidelines and Content Guidelines for Recommendation Eligibility.[55]

88. Snap's Community Guidelines bar a number of types of content, such as content that promotes self-injury, suicide, or eating disorders and pornographic content.[56]

89. Snap has also made strategic investments in editorial, machine learning-based filtering, and

[53] Andreou Deposition Tr. at 174:11–15, 398:13–399:25 (testifying that, out of an average 30 minutes a day spent on the app, users spend only seven minutes on Snapchat's content feeds); Transcript of the Deposition of Snap Witness Peter Sellis, Feb. 26, 2025 at 336–38 ("I would say the Camera tab and the Chat tab account for about 60 percent of time spent[.]"); Boyle Deposition Tr. Vol. 2 at 561:14–17 ("[T]he Camera screen is what Snapchat opens to by default, because the biggest reason why people use the app is for visual expression and the camera and communication.").

[54] Andreou Deposition Tr. at 174:16–18 ("[O]ur intent with Spotlight is obviously to personalize content to deliver value to you.").

[55] Weissinger Deposition Tr. at 312:25–315:6, 316:2–21, 317:18–319:9.

[56] *Policy Center, Community Guidelines*, https://values.snap.com/policy/policy-community-guidelines [as of July 8, 2025].

ranking logic to elevate high-quality content and reduce harmful or low-effort material.[57]

90. To address potentially sensitive or suggestive material, Snap has implemented multiple layers of moderation in Spotlight and Discover.[58] For example, the Content and Policy teams have trained machine learning classifiers to tag "suggestive" and "sensitive" content, which powers filtering systems and personalized downranking.[59] Snap also developed a sophisticated moderation model for Spotlight text submissions that uses natural language processing to improve precision in filtering spam and policy violations.[60]

91. Snap has also actively adjusted policies to exclude inappropriate material, such as sexually suggestive content, especially where minors are concerned.[61] Snap also implements additional protections for minors. For example, adults over 18 are prevented from commenting on minors' content in Spotlight Comments.[62]

92. Snap allows users to report content in Spotlight and Discover, and Snap's internal systems flag and route these reports to moderation teams for action.[63]

93. Plaintiffs' expert Dr. Arvind Narayanan opines that Spotlight and Discover are designed to drive engagement above all else and tries to cast doubt on Snap's claim to the contrary that it limits virality across the app.[64] Specifically, Dr. Narayanan states that Snap's content

[57] Weissinger Deposition Tr. at 83:3–16.

[58] *Id.* at 312:25–315:6, 316:2–21.

[59] SNAP4589902; Weissinger Deposition Tr. at 88:6–13.

[60] SNAP1627559.

[61] Weissinger Deposition Tr. at 309:1–311:9.

[62] SNAP5282987 at -998.

[63] Transcript of Deposition of Snap Witness Althea Tupper, Nov. 14, 2024 at 109:9–14.

[64] Arvind Narayanan Expert Report [5/16/2025] ("Narayanan Report [5/16/2025]") at 53–54.

recommendation algorithms are based on engagement-related metrics such as view time and that he has "not come across any other measures which might have the effect of limiting virality."[65] But Dr. Narayanan misunderstands Snap's statements on this topic, which are not that the algorithm itself limits virality, but rather that the company limits virality by heavily moderating content (via the robust, two-tiered process described in Paragraphs 83-85) before it can ever reach a wide audience.[66] This reflects a responsible balancing between engagement and user wellbeing.

94. Dr. Narayanan also characterizes Snap's reliance on metrics like view time as exploitative of users' behaviors and preferences. But such metrics are not only standard across a variety of industries (the television industry, for example, has tracked metrics like view time since long before the advent of social media) but, as noted above, help ensure that users are served content they find interesting, valuable, and entertaining when they choose to go on the app.

95. In sum, the design of Snapchat's algorithmic feeds shows a clear effort to balance usability, discovery, and user safety. By opening to the camera, placing algorithmic content in separate tabs, enforcing robust moderation protocols, and allowing for user reporting, Snap has implemented algorithmic feeds in a responsible and industry-aligned manner.

2. Notifications

96. Notifications are a common part of how messaging platforms function and have been present

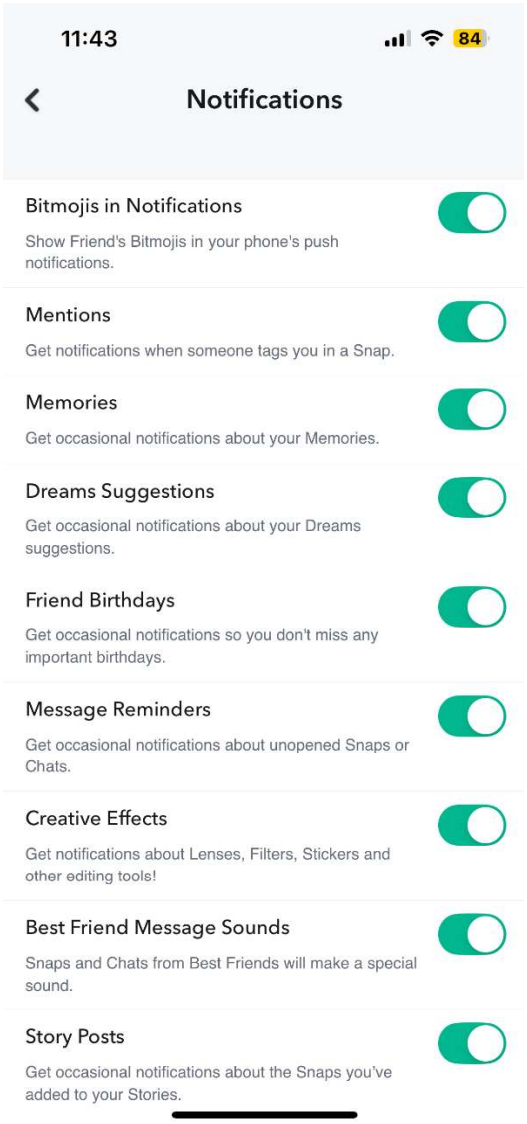
[65] *Id.* at 53.

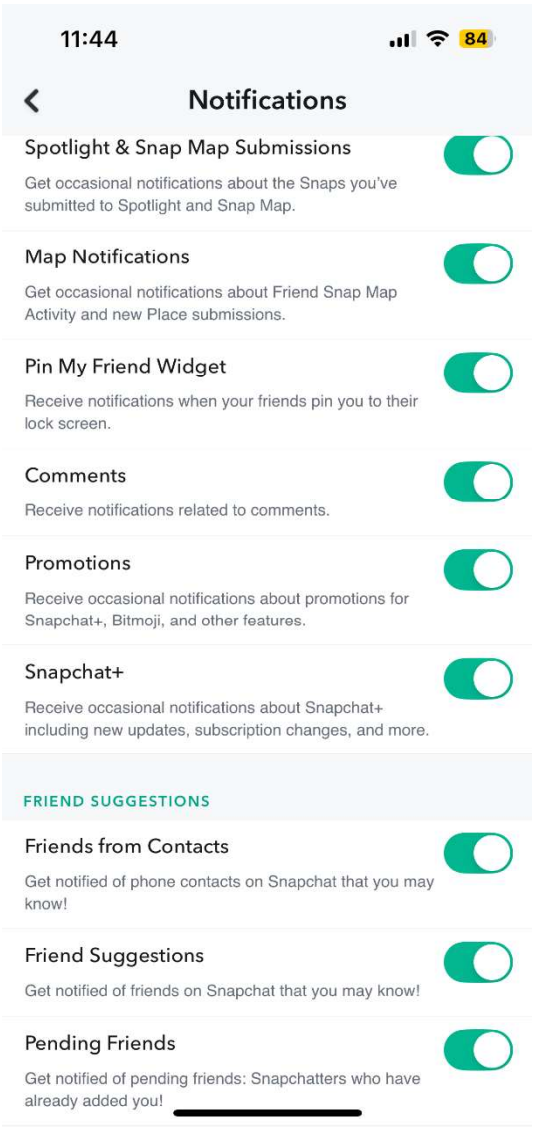
[66] SNAP0013004 at -005 ("By design, Snapchat does not feature an open newsfeed where anyone can share unmoderated content with a large audience … Our Discover content platform is closed and only features content from vetted media publishers and Snap Stars (our version of verified accounts) … [and o]ur Spotlight platform, which is where any Snapchatter can submit content that could be viewed by a large audience, is pre-moderated using human review before a piece of content can reach more than 25 people."); *see also* Yadegar Deposition Tr. at 175:25–176:8.

since the earliest digital communication tools, including email and instant messaging. Snapchat's use of notifications is consistent with that long-standing paradigm. Like other communications apps, Snapchat provides notifications to inform users about new activity—such as incoming chats, Snaps, friend activity, or feature updates—and to encourage timely engagement with the platform.

97. Snap's notification system reflects not only established norms, but also incorporates responsible design. Users have robust control over notification settings. As illustrated below, users can disable many specific types of notifications within Snapchat, such as notifications regarding Story posts, Spotlight submissions, Chat messages, Mentions, Comments, friend's birthdays, friend suggestions, and more.[67]

[67] *See* Boyle Deposition Tr. Vol. 2 at 502:15–22, 609:20–610:13; Transcript of Deposition of Snap Witness Abby Tran, Feb. 26, 2025 ("Tran Deposition Tr.") at 79:5–9, 404:16–22; *How do I turn on Story notifications from friends on Snapchat?*, https://help.snapchat.com/hc/en-us/articles/7012383163796-How-do-I-turn-on-Story-notifications-from-friends-on-Snapchat [as of July 8, 2025]; *How do I turn off Group Chat message notifications on Snapchat?*, https://help.snapchat.com/hc/en-us/articles/7012320219924-How-do-I-turn-off-Group-Chat-message-notifications-on-Snapchat [as of July 8, 2025]; *How do I turn off message or call notifications from someone on Snapchat?*, https://help.snapchat.com/hc/en-us/articles/7012355955988-How-do-I-turn-off-message-or-call-notifications-from-someone-on-Snapchat [as of July 8, 2025].





98. Plaintiffs' expert Dr. Colin Gray characterizes this robust and varied user control as a form of "obstruction."[68] In Dr. Gray's view, Snap's heavily customizable notification settings "increas[e] the effort required to achieve a user's goal of reducing interruptions" and leaves users "with few practical tools to self-regulate."[69] This is a backwards, counterintuitive view of Snap's offerings—the ability to granularly customize notification settings gives users

[68] Colin Gray Expert Report [5/16/2025] ("Gray Report [5/16/2025]") at 63.

[69] *Id.*

more, not less, agency.

99. Snap also has checks in place to avoid redundant or excessive notifications, including rate limiting, a method of controlling the number of notifications a user can receive during a specified period of time.[70] For example, as part of its responsible notification strategy, Snap historically applied a 48-hour cooldown period between growth-related notifications, eventually transitioning to a more personalized, machine learning-based rate limiting approach that tailors delivery based on user engagement history and feedback (e.g., whether a user has recently disabled notifications).[71] Since 2017, Snap has also limited growth notifications—that is, notifications unrelated to messaging—overnight.[72]

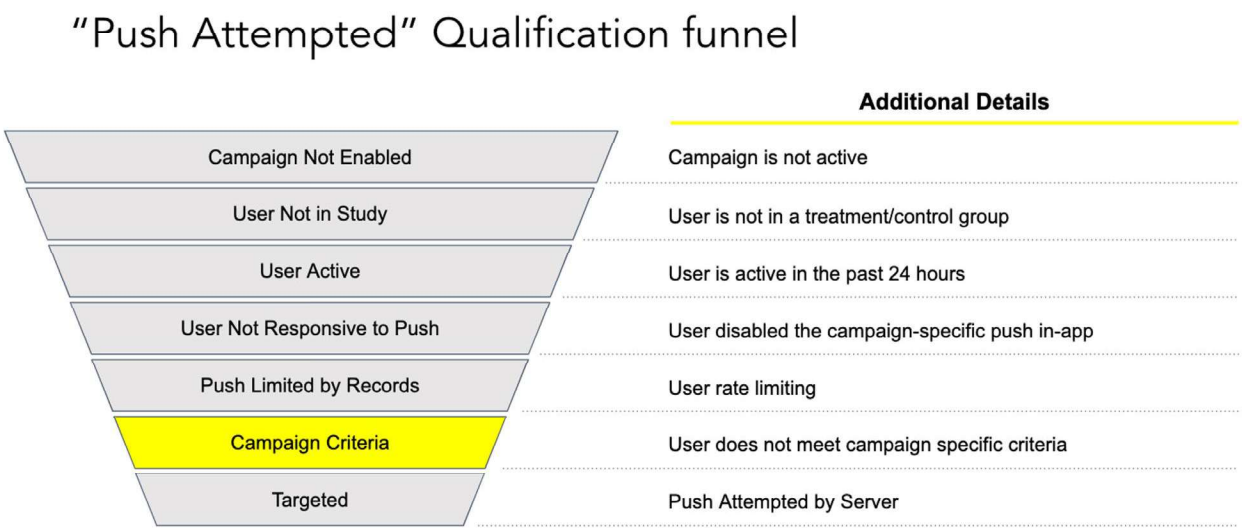
100. As illustrated below, notification campaigns are also subject to detailed qualification funnels that screen for user activity and ensure relevance.[73]

[70] Boyle Deposition Tr. Vol. 2 at 472:7–-14 (explaining that Snap has checks in the system that avoid sending growth notifications to users who are actively using the app); *see also* Tran Deposition Tr. at 405:11–22; SNAP1322227 at -238.

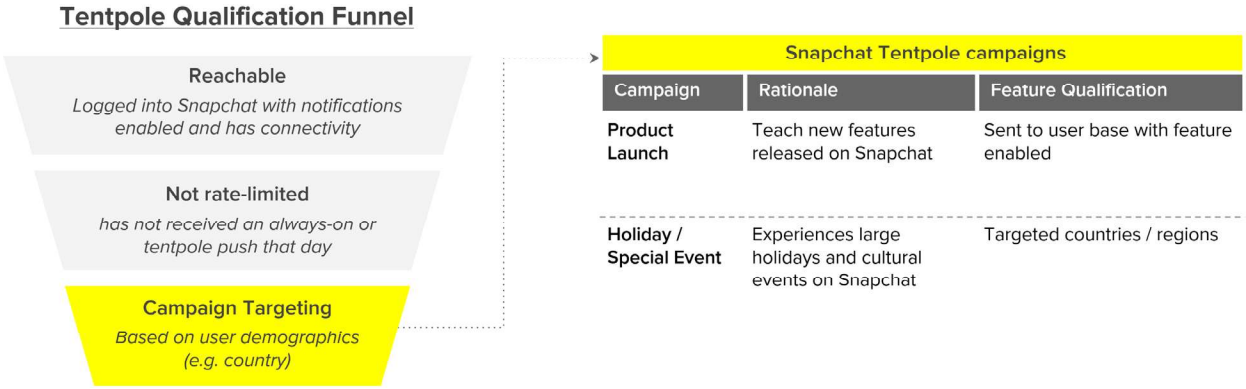
[71] SNAP1322227 at -238.

[72] Boyle Deposition Tr. Vol. 2 at 610:21–611:6; Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 60.

[73] SNAP1355195 at -198.



101. For example, as illustrated below, Snap does not send "tentpole" push notifications—notifications relating to significant events, such as major holidays—to users who have already received certain types of notifications that day.[74]



102. These detailed qualification funnels reflect reasonable restraint in Snap's notification practices, consistent with standard product development practices.

103. Importantly, Snap monitors key performance indicators across four pillars of responsible notification delivery: reach, efficiency, engagement, and downside impact.[75] These metrics

[74] SNAP1322227 at -235.

[75] *Id.* at SNAP1322241.

include open rate, app actions taken, notification disables, and uninstalls.[76] The system is continuously monitored to ensure that it maintains user receptiveness and avoids notification fatigue.[77]

104. Snap's notifications must also be evaluated as part of the broader digital ecosystem in which Snap operates. Mobile operating systems like Apple iOS and Android allow users to suppress, filter, or silence app notifications altogether. These systems support features such as quiet hours, focus modes, and notification previews.[78] In this context, it would be duplicative for Snap to recreate all platform-level controls that are already natively available to users.

105. Overall, Snap's notification architecture reflects industry-standard functionality, augmented by user control, rate-limiting, personalization, and internal monitoring. These features support Snap's goal of maintaining a high-quality user experience while enabling timely communication—consistent with reasonable, well-accepted design practices.

3. Streaks

106. Streaks are designed to mark consecutive days in which two friends exchange Snaps, serving as a lightweight symbol of consistency in communication. Streaks were intended to mirror the way relationships develop through frequent, meaningful interaction, and to reflect closeness between friends without broadcasting activity publicly.[79] As illustrated below, a Streak is depicted by a fire emoji in the chat tab, next to the name of the user with whom the

[76] *Id.*

[77] *Id.*

[78] Boyle Deposition Tr. Vol. 2 at 504:11–14, 508:17–22.

[79] Andreou Deposition Tr. at 193:20–195:7.

Streak is shared[80]:

107. Streaks are private and not publicly ranked or gamified. Only the two friends that share a Streak can view the Streak fire emoji and number. This reflects a measured and responsible design choice—displaying Streaks publicly might drive increased usage but also could lead to competitive behavior.

108. Streaks are intended to be fun and celebrate close friendships, and Snap has proactively implemented multiple safeguards and design mitigations to ensure the feature remains positive and does not create undue burden on users. Snap has done this even though its research has suggested that only a small minority of users experience significant stress in connection with Streaks, underscoring its commitment to the wellbeing of all Snapchat users.[81]

[80] Makvana, *What Is a Streak on Snapchat? (and How to Start One)* (Nov. 23, 2022) https://www.howtogeek.com/848248/what-is-a-streak-on-snapchat-and-how-to-start-one/.

[81] SNAP1352449 at -470; Boyle Deposition Tr. Vol. 2 at 608:5–18.

109. Snap, for example, has long allowed users to contact customer support to request that a Streak that has lapsed be restored for free.[82] Snap has also created a dedicated button that users can click to request that a Streak be restored, with users permitted to have one Streak restore free of charge per lifetime (or, in the case of Snapchat+ subscribers, one free restore per month) and subsequent restores permitted for a small fee.[83] Snap has also made Streaks easier to maintain over time; specifically, Snap has extended the period of time within which users must exchange a Snap to keep their Streak going (i.e., as it stands, users only need to exchanges messages each 38 hours or so; that period was originally shorter but has been extended over the years to make it easier to maintain a Streak).[84]

110. Another key design choice is the delayed activation of a Streak: Streaks do not begin until two users have communicated with each other for three consecutive days.[85] This design tradeoff intentionally discourages superficial Streaks and ensures that only sustained interactions trigger a visible Streak.

111. Plaintiffs' expert Tim Estes opines that in response to the findings that a minority of users find Streaks stressful, "Snap could have, and should have, turned this feature off for minors."[86] But disabling a feature that most users enjoy for an entire subset of users is neither necessary nor proportionate in response to concerns that some users find some aspects of the feature stressful. Extending the window of time within which users must Snap back and

[82] Tran Deposition Tr. at 35:9–14, 237:16–238:5.

[83] Transcript of Deposition of Snap Witness Nathan Boyd, Mar. 28, 2025 ("Boyd Deposition Tr.") at 167:8–168:10; Tran Deposition Tr. at 237:4–8, 239:24–240:7.

[84] Boyd Deposition Tr. at 160:25–161:9; SNAP7339203 (noting that the "expiration timeframe" is effectively "38h+10min").

[85] Tran Deposition Tr. at 35:6–8.

[86] Estes Report [5/16/2025] at 20.

forth, and offering free restores both in-app and through customer support, are much more measured, reasonable adjustments that strike the right balance between usability and user wellbeing.

112. Estes's report overlooks the meaningful changes Snap made to make Streaks easier to maintain and therefore less stressful. Estes suggests that Snap chose instead to monetize the feature.[87] Specifically, Estes criticizes Snap's decision to charge a small fee for in-app Restores, beyond the initial free Restore.[88] But charging less than a dollar to restore a lost Streak is a reasonable way to preserve the significance of Streaks while making it easier to maintain them; if users could restore Streaks without even minimal friction (i.e., a 49c or 99c charge, depending on the length of the Streak), Streaks would be less meaningful markers of depth of friendship.[89]

113. In sum, Snap's management and evolution of Streaks reflects a measured and user-centric approach. The company has built meaningful opt-outs, implemented pacing mechanisms, added clarity to reduce stress, and preserved Streaks as a private, friendship-oriented feature. These design decisions are consistent with responsible product development and demonstrate Snap's responsiveness to user needs and safety concerns.

4. Snap Map

114. Snap Map is Snapchat's optional location-sharing feature that enables users who have opted

[87] *Id.*; *see also* Gray Report [5/16/2025] at 65.

[88] Estes also criticizes Snap's decision to launch the Freeze Streaks feature for Snapchat+ subscribers, see Estes Report [5/16/2025] at 20, but this feature was never launched. *See* Transcript of Deposition of Snap Witness Jeremy Voss, Apr. 4, 2025 ("Voss Deposition Tr.") at 429:6–19, 478:8–16 (testifying that as of his departure from Snap in February 2024, Snap had not launched "unplugged mode"); *see also* Voss Deposition Tr. at 425:9–21 (quoting from an internal document indicating that unplugged mode was another name for freezing Streaks).

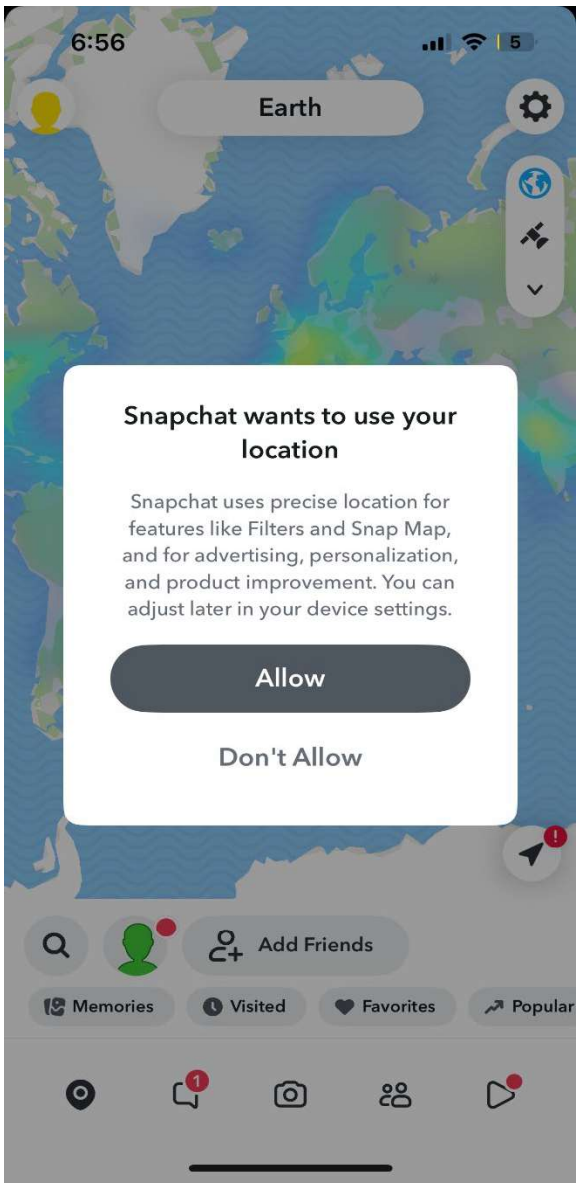
[89] Tran Deposition Tr. at 240:5–7, 241:2–20.

into location sharing to show their friends where they are. Location sharing on Snap Map has always been optional.[90] From its inception, Snap Map has been built with an approach that emphasizes user control and transparency.

115. Snap Map is explicitly positioned as a fully opt-in feature, designed around voluntary and contextual visibility—not passive surveillance. Location sharing on Snap Map is off by default, meaning users must affirmatively opt in to enable location sharing,[91] as illustrated below. This default-off setting is a deliberate safeguard to ensure that no location data is shared passively or inadvertently.

[90] *Looking Out for Friends on the Snap Map* (Feb. 18, 2022), https://values.snap.com/news/looking-out-for-friends-on-the-snap-map.

[91] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 28–29.



116. Even after users choose to enable location sharing, their location isn't automatically shared with their friends—it is shared only with Snap, and the user is placed in Ghost Mode, a setting that hides the user's location from other users on Snap Map.[92] To share their location with their friends on Snap Map, users must affirmatively select who they want to share their location with—they can individually select friends, exclude certain friends, or select all

[92] *Id.*; Boyle Deposition Tr. Vol. 2 at 603:3–11.

friends.[93] Even after they've shared their location with their friends, users can easily stop doing so by enabling Ghost Mode again.[94] There is no option that allows a Snapchat user to share their location with people they are not friends with on the app.[95]

117. In sum, Snap requires a double opt-in for purposes of location sharing and offers fine-grained sharing controls to users that opt in. This model requires more engineering complexity than a binary on/off toggle, but Snap invested in this flexibility to support user safety and choice.

118. Unless your location settings are set to "Always," location updates occur only when the app is open, not continuously in the background.[96] This reinforces user agency by ensuring that location-sharing reflects intentional use. Snap also sends periodic alerts to remind users that have not opened the Map in some time that their location is being shared, further reinforcing user agency and ensuring the intentionality of the choice to share location.[97] For example, when minors who are sharing their location add new friends on Snapchat, they will receive an alert to remind them that they are sharing their location and to confirm that they would like to share their location with the new friend.[98]

119. Snap Map also respects system-level privacy controls:

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[93] *How do I share my location with only select friends on Snapchat?*, https://help.snapchat.com/hc/en-us/articles/7012277077140-How-do-I-share-my-location-with-only-select-friends-on-Snapchat [as of July 8, 2025; Boyle Deposition Tr. Vol. 2 at 603:9–11.

[94] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 28–29.

[95] *Safety at Snap*, https://educators.snapchat.com/safety-at-snap [as of July 8, 2025] ("Snapchatters [can] share their location only with their existing Snapchat friends – there is no option to broadcast their location to the wider Snapchat community.").

[96] SNAP5207339 at -340.

[97] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 29.

[98] Boyle Deposition Tr. Vol. 2 at 603:12–18.

(a) On iOS, users and parents can disable Snapchat's access to location services globally or per app. When disabled, Snap cannot collect location data.

(b) On Android, similar device-level controls and Family Link tools provide guardians the ability to restrict or block app-level location access.

120. Given the strength and sophistication of these operating system features, Snap has reasonably chosen not to recreate duplicative in-app tools that are already effectively provided by Apple and Google. Instead, Snap builds on platform-native protections and integrates its own customization options.

121. In sum, Snap Map provides robust privacy while still enabling meaningful friend discovery and real-world interaction—consistent with modern safety expectations and best practices. It begins with non-sharing as the default, offers nuanced user-controlled visibility options, respects mobile OS restrictions, and supplements these with tools like Ghost Mode and customizable sharing. These choices are consistent with best practices for location-sensitive technology and reflect Snap's thoughtful design that considers usability and safety.

5. Find Friends (formerly Quick Add)

122. Snapchat is fundamentally a communications app, and its utility relies on users' ability to connect with real-life friends and acquaintances. A user's experience on Snapchat is enriched when they can interact with people they know—whether by exchanging Snaps, sharing Stories, or engaging in real-time chats. Accordingly, facilitating connection with people the user already knows is a core product objective for Snapchat.[99]

[99] Unlike most messaging apps, Snapchat allows communication only between users that have mutually confirmed they wish to communicate with one another. Find Friends is key to facilitating those connections. *See* Boyle Deposition Tr. Vol. 2 at 583:5–21, 588:3–589:5 (contrasting Snapchat to most messaging apps, in which a user can receive a message from a

123. The Find Friends feature is one of Snapchat's tools for helping users build their network of meaningful connections. Find Friends suggests potential friends that the user may know in real life based on factors such as mutual friends or appearing in a user's phone contacts.[100] The goal is to help users discover friends they might otherwise have missed on the platform.[101]

124. Find Friends functions as a prediction engine, and like any recommendation system, it operates with inherent tradeoffs.

125. A more inclusive prediction model can maximize opportunities for connection by casting a wider net—thereby reducing the chance that users miss out on friends who aren't already directly linked. However, this increased inclusivity comes with a potential cost: it raises the risk that some suggested users may not be well-known or welcome to the individual.

126. On the other hand, while tightening the criteria to make suggestions more exclusive will reduce less relevant suggestions, it may also exclude legitimate real-world friends who do not meet a narrow set of technical criteria.

127. Snapchat's design team has acknowledged this tension and, in practice, has prioritized safety over inclusivity. The platform has implemented multiple safeguards to mitigate the risks associated with overbroad recommendations.

128. For example, Snapchat has taken steps to reduce the visibility of minors in Find Friends.

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stranger so long as the stranger has the user's phone number, and explaining how Find Friends facilitates real-world connections on the app, which is not designed to connect users with strangers).

[100] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 56–57.

[101] Boyle Deposition Tr. Vol. 2 at 588:16–589:5.

Specifically, Snap prevents minors from being suggested as friends to other users via Find Friends unless at least one of the two users appears in the other's phone contacts or the users share a minimum number of mutual friends on Snapchat.[102] Additional constraints are applied to accounts flagged for suspicious activity or mass friending behavior.[103] These measures have the effect of intentionally reducing the inclusivity of Find Friends, which sacrifices engagement in the name of promoting user safety and minimizing unwanted contact, particularly where minors are concerned.

129. Plaintiffs' expert Brooke Istook disregards these minor-specific protections in her report. Based on a single email thread from May 2021, Istook opines that Snap employees knew minors could be suggested to adults via Find Friends and vice versa yet did little about it, stating "[i]t is unclear if or when children were effectively safeguarded from the risks of this feature."[104]

130. But the minor-specific protections discussed above have been in place since late 2021 and are well-documented in internal Snap documents, publicly available sources, and even Snap's Second Supplemental Responses and Objections to Plaintiffs' Second Set of

[102] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 29; Boyle Deposition Tr. Vol. 2 at 590:19–591:8. Plaintiffs' expert Tim Estes's report incorrectly claims that these restrictions on minors being suggested via Find Friends were implemented in 2023. Estes Report [5/16/2025] at 36, n.173. But these restrictions have been in place since 2021. Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 29–30.

[103] *See, e.g.*, *Troubleshoot Issues Adding Friends on Snapchat*, https://help.snapchat.com/hc/en-us/articles/7012393035156-Troubleshoot-Issues-Adding-Friends-on-Snapchat [as of July 8, 2025] (adding too many friends too quickly can result in temporary inability to add additional friends); *Safety at Snap*, https://educators.snapchat.com/safety-at-snap [as of July 8, 2025] (describing other "protections against unwanted contact").

[104] Brook Istook Expert Report [5/16/2025] ("Istook Report [5/16/2025]") at 35.

Interrogatories, which Istook cites in her report.[105] Istook's opinion thus does not accurately reflect Snap's consideration of safety as part of its Find Friends feature development process.

131. In fact, the document Istook relies on for her opinion reflects the serious and continuing consideration given by Snap employees to the issue of minor safety as part of the product development process. In it, David Boyle proposes that they "define a goal to make quick add safer for minors specifically" and Nima Khajehnouri vows to "prioritise it[.]"[106] Later that year, Snap launched the minor-specific protections described above.

132. The document also reflects that previous consideration had been given to the possibility of allowing minors to be suggested only to other minors (as best surmised through the use of inferred age) but that concerns had been raised about how such a change could "creat[e] an abuse vector with adults who pretend to be minors."[107] This reflects a reasonable weighing of tradeoffs consistent with responsible product development practices.

133. From a user control perspective, since 2016, Snapchat has given individuals the ability to manage their visibility.[108] As illustrated below, any user can choose to disable the "Show me in Find Friends" option in their settings[109]:

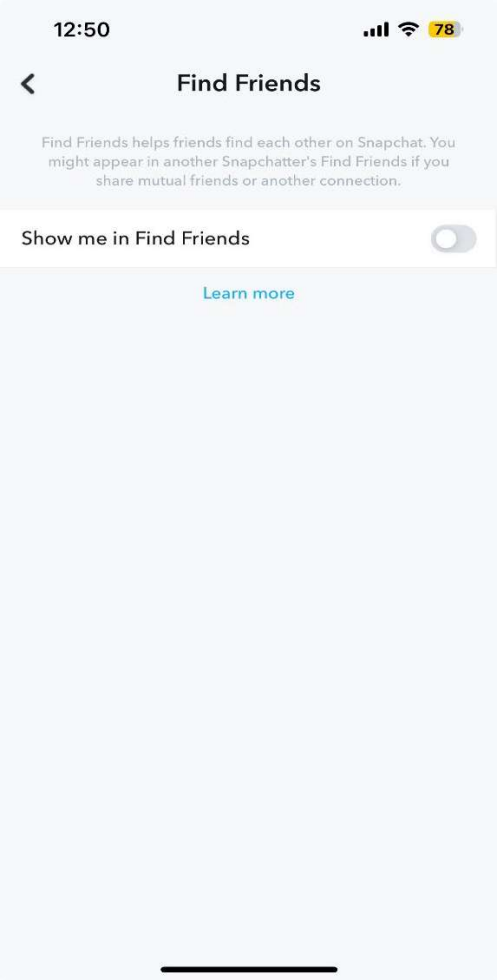
[105] *See id.* at 35, n.100.

[106] SNAP2157134.

[107] *Id.*

[108] Boyle Deposition Tr. Vol. 2 at 589:7–590:4; SNAP4965902.

[109] *What is Find Friends?*, https://help.snapchat.com/hc/en-us/articles/35382503314580-What-is-Find-Friends [as of July 8, 2025] ("Snapchatters always have the option to turn off the ability to show up in Find Friends[,]" formerly Quick Add).



134. When the "Show me in Find Friends" setting is toggled off, that user will no longer appear in other users' Find Friends lists, even if they would otherwise be eligible for recommendation. This opt-out control gives users meaningful agency over how their identity is surfaced to others.

135. While users can opt out of being suggested, they cannot fully opt out of receiving Find Friends recommendations. This reflects a reasonable design choice: the ability to *receive* suggestions is necessary to ensure that users can find others—particularly during onboarding or after switching devices—when they may not yet have an established contact base on Snapchat.

136. Find Friends is a balanced and intentionally constrained feature designed to support one of Snapchat's core values: connecting users with real friends. Its functionality includes:

(a) A predictive engine that suggests likely real-life connections;

(b) A conservative bias toward minimizing unsafe or uninvited contact;

(c) User-facing opt-out tools to suppress self-appearance in Find Friends;

(d) Internal safety thresholds that reduce false positives by design.

137. In sum, Find Friends reflects a reasonable, safety-conscious implementation of a standard friend recommendation system. It supports the app's core communication goals while also providing protective friction to minimize misuse—striking a balance between network growth and user trust.

6. Lenses

138. Snapchat's Lenses are among its most distinctive features, enabling users to apply augmented reality (AR) effects to their faces, environments, or video content. Despite their popularity, Snap has made deliberate and responsible design choices to ensure that Lenses enhance creativity without compromising user safety or autonomy.

139. When a user opens Snapchat, the app defaults to a plain, unfiltered camera view, not to a pre-selected Lens.[110] This reflects a conscious product design decision to prioritize authenticity and natural visual capture, rather than encouraging users to apply filters or effects automatically.

140. Lenses are entirely opt-in. Users access them by swiping through a carousel, and since at least 2018 Snap has provided the ability to remove specific Lenses from the carousel if a

[110] Transcript of Deposition of Snap Witness Mariia Apanovych ("Apanovych Deposition Tr.") at 262:19–263:3.

user finds them undesirable, irrelevant, or uncomfortable.[111] This customization mechanism ensures that users aren't repeatedly exposed to Lenses they dislike.

141. Since at least 2017, users have been able to report Lenses within the app.[112] Prior to that, users could report content through the Snapchat website.[113] When a user reports a Lens, the report is reviewed by Snap's Trust & Safety or AR Moderation teams.[114] If appropriate, the Lens can be removed or deprioritized.[115] This content review process has been key to Snap's ongoing continuous improvement model, and it reflects a high-touch approach to community feedback.

142. Since its inception in 2019, Snap's AR Moderation Team has developed robust policies and practices for Lens moderation.[116] These are applied across both user-submitted (community) and Snap-created (organic) Lenses. Lenses, for instance, are reviewed proactively upon launch as well as reactively if a user reports them.[117] And organic lenses—that is, those created by Snap itself—are subject to stricter moderation standards.[118]

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[111] Apanovych Deposition Tr. at 266:17–267:14; SNAP5227750.

[112] Apanovych Deposition Tr. at 267:1–6; *see also* Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 40–41 (discussing the launch of in-app content reporting in 2017).

[113] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 40.

[114] Apanovych Deposition Tr. at 267:18–268:20; Transcript of Deposition of Snap Witness Deborah Oshuntola ("Oshuntola Deposition Tr.") at 40:19–41:3.

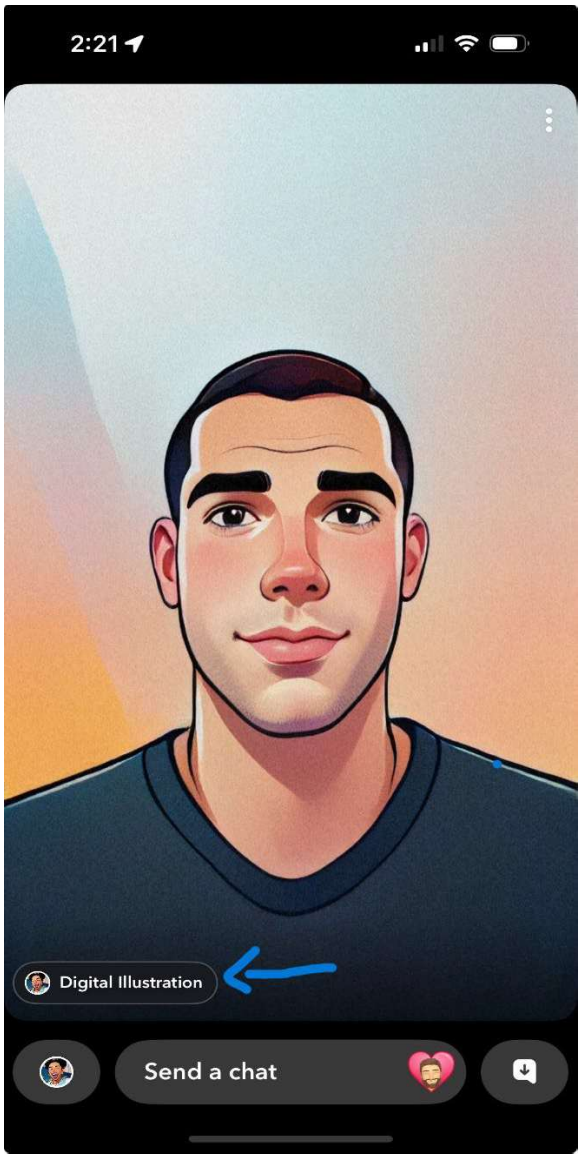
[115] Apanovych Deposition Tr. at 268:22–269:2.

[116] Oshuntola Deposition Tr. at 44:15–45:3 (testifying that before the AR Moderation Team was formed in 2019, lenses were moderated by the Trust & Safety team).

[117] *Id.* at 40:20–41:1, 353:1–6, 365:14–21.

[118] *Id.* at 346:9–25.

143. Since around 2018–2019, Snap has also disclosed when Lenses are used.[119] When users share content that has been modified using a Lens, Snap offers "context cards" associated with the modified content, which alert viewers that a Lens was applied, as illustrated below.



144. This transparency builds trust and prevents the deceptive use of AR tools.

145. Snap also invests heavily in UX feedback and research to continually improve its Lenses

[119] Apanovych Deposition Tr. at 196:16–197:3, 269:4–17.

and address concerns associated with user well-being. The "Inclusive Camera" initiative, for example, aimed to address concerns around representation and inclusivity, particularly related to skin tone detection, beauty norms, and algorithmic fairness.[120] This initiative underscores Snap's goals of making AR Lenses fun, safe, and inclusive across racial and cultural backgrounds.

146. In sum, Snap's approach to Lenses includes:

(a) Opt-in access via the Lens carousel, not by default;

(b) Ability to hide and report individual Lenses;

(c) Moderation workflows for both community and Snap-created content;

(d) Inclusive product development guided by internal and external feedback.

147. These features demonstrate Snap's commitment to a Lens platform that fosters creative self-expression while maintaining high standards of safety, transparency, and user choice.

7. Ephemerality

148. One of Snapchat's defining features is the ephemeral nature of its communications. Unlike many messaging or social platforms where content is stored indefinitely, Snapchat is designed to mirror in-person conversation—temporary, informal, and fleeting.[121] This decision reflects a product philosophy centered on privacy, user control, and safety.

149. The short-term retention of Snaps and Chats aligns with numerous best practices in privacy and security design. By default, Snaps delete after being viewed and Chats delete 24 hours

[120] SNAP4336520; SNAP3210317; Transcript of Deposition of Snap Witness Jonathan Brody ("Brody Deposition Tr.") at 215:11–15.

[121] Boyle Deposition Tr. Vol. 2 at 580:13–15 ("[T]he reason why Snap messages are ephemeral by default is that it's designed to mimic real-life conversations.").

after being viewed, unless intentionally saved or the retention settings are changed.[122] This limits the accumulation of sensitive personal content on Snap's servers, thereby reducing the risk and incentive for malicious actors to attempt data exfiltration or hacking attacks.

150. Ephemerality supports users' psychological and social well-being. By removing the permanence of posts and messages, Snapchat allows users to communicate more freely—without the fear that any misstep or typo will be preserved indefinitely.[123]

151. At the same time, Snap offers users robust optionality to change the app's default settings with respect to ephemerality, should they wish to do so. For example, users can choose to have their one-on-one chats deleted immediately after viewing, 24 hours after viewing, or 7 days after viewing.[124] This reflects a balanced and responsible approach to product design, one that reasonably defaults to the app's core value offering of ephemeral messaging resembling real life communication, but respects and enables the exercise of individual user preference.

152. Snap has also taken steps to ensure that its systems remain responsive to user safety needs, notwithstanding ephemerality. Users can report abusive or concerning Snaps and Chats before they expire by pressing and holding on the Snap or Chat message and tapping on "Report,"[125] as illustrated below:

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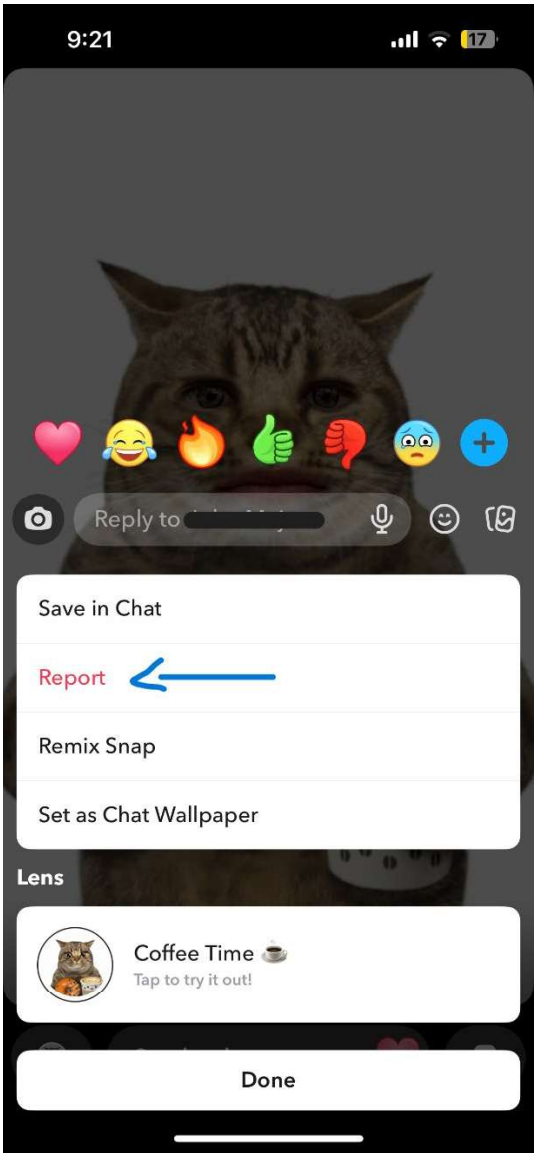
[122] *When does Snapchat delete Snaps and Chats?*, https://help.snapchat.com/hc/en-us/articles/7012334940948-When-does-Snapchat-delete-Snaps-and-Chats [as of July 8, 2025].

[123] Boyle Deposition Tr. Vol. 2 at 580:15–25.

[124] *When does Snapchat delete Snaps and Chats?*, https://help.snapchat.com/hc/en-us/articles/7012334940948-When-does-Snapchat-delete-Snaps-and-Chats [as of July 8, 2025].

[125] *How do I report abuse or illegal content on Snapchat?*, https://help.snapchat.com/hc/en-us/articles/7012399221652-How-do-I-report-abuse-or-illegal-content-on-Snapchat#report-snap-story [as of July 8, 2025].



153. These reports are then routed to Snap's Content Moderation and Trust & Safety teams, where trained personnel review the content and take action in accordance with platform policies. This ability to report content reflects Snap's use of best practices for continuous safety improvement, balancing short-term communication with necessary avenues for accountability.

154. Additionally, Snapchat does not prohibit or prevent device-level recording tools, such as screenshots or screen recordings. If a user is concerned about content they receive—such as

bullying, harassment, or threats—they can use their phone's built-in capabilities to preserve a record and share it with others, including parents, school officials, or law enforcement. Unlike some platforms that disable or block screen captures, Snap permits these tools, often paired with a notification system that alerts users when a screenshot is taken.

155. Snap's approach to ephemerality reflects a nuanced tradeoff between usability, safety, privacy, and security that:

(a) Minimizes long-term exposure of sensitive content,

(b) Supports spontaneous and authentic communication,

(c) Retains user agency through screenshot and reporting tools, and

(d) Implements safeguards to address misuse in a timely and effective manner.

156. This layered architecture shows that ephemerality, as implemented by Snap, is a purposeful design that addresses a complex intersection of concerns in a responsible and forward-thinking manner.

8. Reporting Mechanisms

157. Plaintiffs' expert Brooke Istook opines that "Snap has been inexplicably slow to implement accessible and effective end-user reporting."[126] But Snap's reporting offerings go well beyond what is standard for messaging applications and have long reflected a serious commitment to robust and easily accessible reporting mechanisms.

158. Reporting through the Snapchat website, with or without a Snapchat account, has been available since the early days of the app, and in-app reporting has been available since mid- to late-2017, including in-app account reporting, which has been available since November

[126] Istook Report [5/16/2025] at 35.

2017.[127] Users can report pieces of content, such as Stories, Snaps, or Spotlight videos; accounts; and chats.[128]

159. Istook notes that "prior to 2023, Snap lacked any mechanisms through which users could report specific chat content, despite the chat feature having been launched in 2014."[129] But the decision to implement chat text reporting at all sets Snapchat apart from other messaging apps on the market. For example, as David Boyle testified, "there's no way to report specific chats" sent via iMessage, perhaps the most popular messaging app in existence.[130] This is no accident. Chat text reporting requires serious attention to privacy considerations and tradeoffs,[131] in light of which it was reasonable for Snap to be deliberative about implementing chat text reporting. It is also worth noting that privately sent Snaps, as opposed to Chats, had long been reportable as content.[132]

160. In sum, Snap's reporting offerings are robust, accessible, and reflect a highly responsible approach to product development that strikes the right balance between usability, safety, and privacy.

VI. CONCLUSION

161. Based on the evidence reviewed—including internal Snap documents, product specifications, deposition testimony from Snap engineers and executives, and the structural

[127] Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories at 40–41; Boyle Deposition Tr. Vol. 2 at 594:9–595:10, 597:6–8.

[128] Boyle Deposition Tr. Vol. 2 at 594:9–19.

[129] Istook Report [5/16/2025] at 37.

[130] Boyle Deposition Tr. Vol. 2 at 598:21–599:2.

[131] *Id.* at 599:1–9.

[132] *Id.* at 599:16–20.

features of the Snapchat application—it is my opinion that Snap's product design decisions were reasonable, responsible, and consistent with widely accepted practices in modern software engineering.

162. Snapchat is a technically sophisticated platform that serves hundreds of millions of users, processes an enormous volume of real-time communication data, and operates across a diverse range of devices and geographies. Within these constraints, Snap has made deliberate and well-considered tradeoffs in the development of its features. These include prioritizing ephemerality over content permanence, opening the app to a camera instead of an algorithmic feed, limiting location sharing by default, and giving users granular control over features like notifications, friend suggestions, and public content discovery.

163. Many of the alternative design proposals suggested by Plaintiffs or critics overlook the engineering realities and tradeoffs required to operate a system at this scale. Proposals that appear simple in concept often have cascading implications for privacy, latency, cost, abuse prevention, or overall platform integrity. Snap's choices, when viewed in context, represent practical and proportionate responses to these operational challenges.

164. In summary, Snap's product development practices and feature implementations reflect a reasonable and evolving effort to balance user experience, safety, and technical feasibility. While no digital platform is without challenges, the evidence demonstrates that Snap has consistently taken a principled and measured approach to product design—one that aligns with both industry norms and the expectations of responsible platform governance.

Signed by:
Sandeep Chatterjee
C333B316ACE1418...
Sandeep Chatterjee

Appendix A

EXPERANTIS
Expert Services for Commercial Litigation

Harvard University
Exec. Ed., Global Leadership

Massachusetts Institute of Technology
Ph.D., Computer Science
M.S., Electrical Engineering & Computer Science

University of California at Berkeley
B.S., Electrical Engineering & Computer Science

Sandeep Chatterjee, Ph.D.

Chief Executive Officer

Professional Summary

Sandeep Chatterjee, Ph.D. is a seasoned technology expert and business professional with almost two decades of hands-on contributions as a thought leader, technologist, consultant, entrepreneur, and author. He is an expert in computer software and hardware systems, with particular emphasis on distributed systems and architectures, service-oriented architectures (SOAs), software-as-a-service (SaaS) and Web Services, end-to-end security, quality-of-service (QoS), communications and telecommunications systems, location-based services, social network services and social media, as well as mobile and wireless systems and applications. He is the co-author of a book on developing enterprise computing systems, which has been adopted by over 100 universities worldwide.

Dr. Chatterjee also has extensive experience with providing expert testimony for intellectual property and commercial litigation, including for high stakes patent litigation, copyright and trade secret misappropriation, contract disputes and patent licensing cases. He has testified at trial, and has had his deposition taken more than 60 times. Dr. Chatterjee combines strong experience with expert testimony within the context of litigation together with worldwide experience in designing, architecting and implementing complex computing systems.

Honors & Achievements

- Listed in the **IAM Patent 1000** of the world's leading patent professionals.
- Named a **Young Global Leader** by the **World Economic Forum** for professional accomplishments, commitment to society and potential to contribute to shaping the future of the world.
- Doctoral dissertation at the Massachusetts Institute of Technology (MIT) was selected as one of the **most important inventions in computing**, and the invention is preserved and showcased in a time-capsule at the Museum of Science in Boston, Massachusetts. Other recipients of this honor include **Bill Gates** (founder of Microsoft) and **Tim Berners-Lee** (inventor of the World Wide Web).
- Technology solution designed by Dr. Chatterjee was identified as a Bloomberg Innovation, and the company he co-founded to commercialize that technology solution was featured on Bloomberg TV's "**Bloomberg Innovators**" program.

Sandeep Chatterjee, Ph.D.

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- Member of the **JSR 172 Expert Group** that defined the worldwide standard for J2ME mobile Web services.

Professional Experience

From:	2013
To:	present
Organization:	Experantis LLC
Title:	Chief Executive Officer
Summary:	Experantis LLC provides consultation and services in all facets of commercial litigation.

From:	2016
To:	2019
Organization:	International Institute of Digital Technologies
Title:	Dean, Mobility Center of Excellence
Summary:	International Institute of Digital Technologies (IIDT) is a leading institute of higher education, focused on digital technologies.

From:	2013
To:	present
Organization:	S3G Technology LLC
Title:	Member
Summary:	S3G Technology LLC provides consultation, products and services related to mobile and wireless solutions that deliver critical services to semi-urban, rural and remote populations across the world.

From:	2011
To:	present
Organization:	World Economic Forum
Title:	Young Global Leader; Member of the Expert Network
Summary:	The World Economic Forum is an international institution for public-private cooperation, and its mission is cited as “committed to improving the state of the world by engaging business, political, academic, and other leaders of society to shape global, regional, and industry agendas.”

From:	2007
To:	present
Organization:	Shuv Gray LLC
Title:	Chief Executive Officer
Summary:	Shuv Gray LLC provides information technology and intellectual property consultation and services.

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From:	2007
To:	2012
Organization:	SourceTrace Systems, Inc.
Title:	Chief Technology Officer & Executive Vice President
Summary:	SourceTrace Systems is a leading vendor of end-to-end mobile and wireless distributed transactional systems for the financial services, agricultural commodities, and product distribution markets around the world.

From:	2004
To:	2007
Organization:	Cyndeo LLC
Title:	Chief Executive Officer
Summary:	Founded Cyndeo to be a leading provider of enterprise integration and mobilization solutions as well as technology strategy consulting and outsourcing services to global corporations, government agencies, and major not-for-profit organizations. Cyndeo provides consulting, software engineering development, and management services to companies and organizations of all sizes, from Fortune Global 100 corporations to small organizations in developing countries.

From:	2001
To:	2002
Organization:	Hewlett-Packard (Palo Alto, CA)
Title:	Senior Member of Technical Staff
Summary:	Independently identified a need in the mobile and e-Business marketplace for a more flexible Web Services platform. Invented a patent-pending (applied) solution, and led the development as well as the initial sales and marketing efforts.

- This next-generation J2EE (HP/Bluestone app server) Web Services solution ties together the emerging Web Services standards, end-to-end transactions, and optimized mobile services & applications.
- Led and managed the entire lifecycle of the product from conception, architectural design, product development, QA, documentation, senior management approval, patent filing, preparation for marketing launch at JavaOne, as well as interfacing with early adopter customers and strategic partners.
- Managed relationships with multiple HP organizations and teams that contributed to the overall solution.
- Positioned the product, targeted key early adopters and partners, and leveraged my own contacts to build successful strategic relationships.
- Selected to provide support to HP/Bluestone's top sales manager, and helped land a strategic account in the Asia-Pac market.
- Selected as the representative for Hewlett Packard to the JSR 172 Expert Group that is defining the worldwide standard for J2ME mobile Web Services.

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From: 1999
To: 2000
Organization: Satora Networks
Title: Founder & Chief Technology Officer
Summary: Founded Satora Networks to create wireless platforms and services for Internet devices based on the technologies invented by Dr. Chatterjee as part of his Ph.D. research at MIT Lab for Computer Science.

- Raised venture funding, recruited the management and core engineering teams, set corporate and product strategy, handled customer and partner relations, and managed overall corporate affairs.
- Architected and led the development of the StrongARM-based mobile hardware platform, Linux-based mobile OS, client-side services, and server-side J2EE environment.
- Landed key customer and partner wins, managed revenue and burn rate to become profitable early on, and oversaw the growth of the company.

From: 1995
To: 2001
Organization: MIT Lab for Computer Science
Title: Doctoral Researcher
Summary: Designed a modular system architecture that supports the cost-effective development of network devices and services. The system consists of Lego-like commodity hardware and standards-based software components that are quickly composed together through a development environment into optimized end-user devices as well as client-side services.

- Architected and implemented the entire system: a Linux-based client software environment, a wireless network and StrongARM processor-based device hardware platform, as well as a Web-based design and optimization environment and tool.
- Successfully mentored and managed a research group of 6 Masters and Bachelors students.
- The technology underlying Dr. Chatterjee's thesis was selected as one of the top inventions in thirty-five year history of MIT Laboratory for Computer Science.

From: 1997
To: 1999
Organization: FidelityCAPITAL (Boston, MA)
Title: Entrepreneur-In-Residence
Summary: Worked with Fidelity senior management and FidelityCAPITAL partners to source, analyze, and fund technology start-ups strategic to Fidelity interests.

- Evaluated business plans submitted to Fidelity for venture funding, and analyzed emerging market and technology trends to identify opportunities for internal spin-offs in the telecom and eBusiness spaces.
- Founded and served as President & CTO of a wireless devices and services company (Satora Networks) that was seed funded by Fidelity.

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Litigation Support Experience

Expert Engagement:
Type of Matter: Enterprise Software Patent Infringement
Case Name: Software AG and Software AG v. BEA Systems

Expert Engagement:
Type of Matter: Mobile software intellectual property litigation.
Case Name: Esmertec v. Tao Group

Expert Engagement:
Type of Matter: Enterprise and mobile software intellectual property litigation.
Case Name: Metrologic Instruments v. Symbol Technologies

Expert Engagement:
Type of Matter: Distributed and mobile computing trade secret litigation.
Case Name: Modular Mining Systems (Komatsu Ltd.) v. Jigsaw Systems et al.

Expert Engagement:
Type of Matter: Distributed computing and network routing systems intellectual property litigation.
Case Name: WebXChange v. Dell

Expert Engagement:
Type of Matter: Communications systems intellectual property litigation.
Case Name: Motorola, Inc. et al. v. Rembrandt Technologies, LP

Expert Engagement:
Type of Matter: Database and object mapping intellectual property litigation.
Case Name: DataTern v. United Airlines

Expert Engagement:
Type of Matter: Control systems intellectual property litigation.
Case Name: Finisar v. Source Photonics

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Case Name: OpenWave v. 724 Solutions

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Case Name: Ganas v. Charles Schwab et al

Expert Engagement:
Type of Matter: Control systems intellectual property litigation.
Case Name: Finisar v. Oplink

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Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Case Name: Motorola Mobility (Google) v. Microsoft

Expert Engagement:
Type of Matter: Wireless networking & management intellectual property litigation.
Case Name: Netgear v. Ruckus Wireless

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Case Name: XpertUniverse v. Cisco Systems

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Case Name: Aeritas v. US Airways, Inc., Delta Airlines, Inc., Alaska Air Group

Expert Engagement:
Type of Matter: Distributed systems intellectual property litigation.
Case Name: Wellogix v. ADP et. al.

Expert Engagement:
Type of Matter: Trade secret misappropriation litigation.
Case Name: Bradford Technologies v. NCV Software et al.

Expert Engagement:
Type of Matter: Mobile systems intellectual property litigation.
Case Name: Ericsson Inc. v. Samsung Electronics Co., Ltd. et al.

Expert Engagement:
Type of Matter: Contract dispute litigation.
Case Name: AMC Technologies v. Cisco Systems

Expert Engagement:
Type of Matter: Distributed systems and security intellectual property litigation.
Case Name: Media Rights Technologies, Inc. v. Capital One Financial Corporation

Expert Engagement:
Type of Matter: Distributed computing intellectual property litigation.
Case Name: American Airlines , Inc. et al. v. Loyalty Conversion Systems Corporation

Expert Engagement:
Type of Matter: Mobile computing and security intellectual property litigation.
Case Name: Tierra Intellectual Borinquen, Inc. v. Toshiba Corporation et. al.

Expert Engagement:
Type of Matter: Distributed computing systems and software intellectual property litigation.
Case Name: Kroy IP Holdings, LLC v. Safeway, Inc. and The Kroger Co.

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Expert Engagement:
Type of Matter: Secure mobile computer hardware and software intellectual property litigation.
Case Name: Maxim Integrated Products, Inc. v. JPMorgan Chase & Co.

Expert Engagement:
Type of Matter: Computer hardware and software antitrust litigation.
Case Name: In Re: Keurig Green Mountain Single Serve Coffee Antitrust Litigation.

Expert Engagement:
Type of Matter: Mobile computer and location-based systems intellectual property litigation.
Case Name: Unwired Planet LLC v. Square, Inc.

Expert Engagement:
Type of Matter: Distributed computing systems intellectual property litigation.
Case Name: AirWatch LLC v. Good Technology Corporation et al.

Expert Engagement:
Type of Matter: Mobile computer and location-based systems intellectual property litigation.
Case Name: Unwired Planet LLC v. Square, Inc.

Expert Engagement:
Type of Matter: Distributed computing systems intellectual property litigation.
Case Name: Good Technology Corporation et al. v. AirWatch LLC

Expert Engagement:
Type of Matter: Mobile computer and location-based systems intellectual property litigation.
Case Name: Square, Inc. v. Unwired Planet LLC

Expert Engagement:
Type of Matter: Software systems intellectual property litigation.
Case Name: American Express Company et al. v. Signature Systems, LLC

Expert Engagement:
Type of Matter: Software and backup systems intellectual property litigation.
Case Name: Farstone Technology, Inc. v. Apple, Inc.

Expert Engagement:
Type of Matter: Distributed computing systems intellectual property litigation.
Case Name: MobileIron, Inc. v. Good Technology Corporation

Expert Engagement:
Type of Matter: Data management intellectual property litigation.
Case Name: Olivistar v. Regions Bank et al.

Expert Engagement:
Type of Matter: Cloud computing and data migration intellectual property litigation.
Case Name: BitTitan v. SkyKick

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Expert Engagement:
Type of Matter: Breach of contract, fraud litigation involving large scale enterprise software.
Case Name: State of Oregon v. Oracle et al.

Expert Engagement:
Type of Matter: Document processing intellectual property litigation.
Case Name: Capital Security Systems v. NCR et al.

Expert Engagement:
Type of Matter: Web page intellectual property litigation.
Case Name: Tele-Publishing, Inc. v. Facebook et al.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Sound View Innovations, LLC v. Facebook, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Zkey Investments, LLC v. Facebook, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Vaporstream, Inc. v. Snap, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Symantec Corporation v. Zscaler, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: American Express Company et al. v. Signature Systems, LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Apogee Telecom, Inc. v. Brian Rosenblatt

Expert Engagement:
Type of Matter: Intellectual property arbitration.
Case Name: Trupanion, Inc. v. Veterinary Data Services, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Leftsnrights, Inc. v. 33Across, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Ameranth, Inc. v. Mobo Systems, Inc. (Olo)

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Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Facebook, Inc. and Instagram, LLC v. Search and Social Media Partners, LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Facebook, Inc. v. Hyper Search LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Touchstream Technologies, Inc. v. Vizbee, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Facebook, Inc., Instagram, LLC and WhatsApp, Inc. v. Blackberry Limited

Expert Engagement:
Type of Matter: Litigation.
Case Name: Roger Hogan et al. v. Toyota Motor Sales, U.S.A., Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Blue Spike LLC v. DISH Network Corp.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: NCR Corp. v. Pendum, LLC and Burroughs, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Snap, Inc. v. Blackberry Limited

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Lufthansa Technik and Certified Aviation Services, LLC v. EcoServices, LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Rovi Guides, Inc. v. Comcast Corp. et al., ITC Inv. No. 337-TA-1158 (2019)

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Microsoft Corporation, Google LLC, Asustek Computer Inc., Acer Incorporated, HTC Corporation v. Mimzi, LLC

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Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Rain Computing, Inc. v. Samsung Electronics Co., Ltd.; Samsung Electronics America, Inc.; and Samsung Research America, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: JBF Interlude 2009 Ltd. - Israel v. Quibi Holdings LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Warner Records, Inc., et al. v. Charter Communications, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: UMG Recordings, Inc., et al. v. Bright House Networks, LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Dolby Laboratories, Inc. v. Intertrust Technologies Corporation

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Document Dynamics, LLC v. Xerox Corporation

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Thaddeus Gabara v. Facebook, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: NexStep, Inc. v. Comcast Cable Communications, LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Facebook, Inc. v. USC IP Partnership, L.P.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Cloudofchange, LLC v. NCR Corp.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: CommVault Systems, Inc. v. Rubrik Inc.

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Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Google LLC v. Express Mobile, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Uber Technologies, Inc. v. AGIS Software Development LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Broadband iTV, Inc. v. AT&T Services, Inc. and AT&T Communications LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Broadband iTV, Inc. v. DIRECTV, LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Samsung Electronics Co., Ltd. v. Blaze Mobile, Inc. and Michelle Fisher

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Proven Networks, LLC v F5 Networks, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: WSOU Investments, LLC v F5 Networks, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: People.AI, Inc. v SetSail Technologies, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: IGT and IGT Canada Solutions ULC v Zynga Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Express Mobile, Inc. v Booking Holdings, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Wapp Tech Limited Partnership v. Wells Fargo Bank, N.A.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Trident Holdings, Inc. v. HubSpot, Inc.

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Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Hafeman v. LG Electronics, Inc.

Expert Engagement:
Type of Matter: Securities litigation.
Case Name: In re Cloudera, Inc. Securities Litigation

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Fintiv Inc. v. Paypal Holdings Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Lyft, Inc. v. AGIS Software Development LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Groove Digital, Inc. v. Jam City, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Consumeron, LLC v. Maplebear Inc. D/B/A Instacart

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Apple Inc. v. Speir Technologies Ltd.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Smart Path Connections, LLC v. Nokia Corp. et al.

Expert Engagement:
Type of Matter: Antitrust litigation.
Case Name: In re Google Play Store Antitrust Litigation

Expert Engagement:
Type of Matter: California Invasion of Privacy Act (CIPA) litigation.
Case Name: Gutierrez v. Converse, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Kove IO, Inc. v. Google LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Dynapass IP Holdings LLC v. Bank of America Corp et al.

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Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Entropic Communications, LLC v Comcast Corporation et al.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: BMG Rights Management LLC, et al. v. Altice USA, Inc., et al.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Multifold International Incorporated Pte. Ltd. v. Google LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Scale Video Coding LLC v. Cisco Systems, Inc.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Dialect LLC v. Bank of America N.A.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Warner Records, Inc. et al. v. Altice USA, Inc., et al.

Expert Engagement:
Type of Matter: California Invasion of Privacy Act (CIPA) litigation.
Case Name: Hughes v. The Neiman Marcus Group LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: KP Innovations 2, LLC v. Samsung Electronics Co., Ltd. et al.

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Sportscastr Inc. (d/b/a PANDA Interactive) v. Sportradar Group AG

Expert Engagement:
Type of Matter: Class action litigation.
Case Name: Attila Csupo et al. v. Google LLC

Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: Sportscastr Inc. (d/b/a PANDA Interactive) v. Genius Sports Ltd.

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Expert Engagement:
Type of Matter: Intellectual property litigation.
Case Name: BrowserKey, LLC v. Bank of America Corporation, et al.

Expert Engagement:
Type of Matter: California Invasion of Privacy Act (CIPA) litigation.
Case Name: Heiting et al. v. I Am Beyond LLC

Expert Engagement:
Type of Matter: Class action litigation.
Case Name: Taylor v. Google LLC

Non-Litigation Consulting Projects

Consulting Engagement:
Type of Matter: Enterprise software architecture and development
Client: Sevak Solutions, Inc.
Services Provided: Architect, specify, and develop enterprise-class software for secure financial transactioning in multiple markets and countries around the world
Date: 2005-2006

Consulting Engagement:
Type of Matter: Enterprise software architecture and development
Client: United States Agency for International Development (USAID)
Services Provided: Specify and develop financial transactioning and tracking software
Date: 2004-2005

Consulting Engagement:
Type of Matter: Training services
Client: South Korean Ministry of Information and Communications
Services Provided: Conducted a workshop to train selected university professors and corporate researchers on properly using mobile and distributed technology for strategic and financial growth.
Date: 2004

Consulting Engagement:
Type of Matter: Product and service strategy and development
Client: Hewlett-Packard Company
Services Provided: Analyze market opportunities for new, market-specific technology product and service offerings
Date: 2004

Consulting Engagement:
Type of Matter: Mobile enterprise software
Client: ACCION International

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Services Provided:	Specified, architected, and developed a mobile enterprise software system for optimizing wireless transactioning.
Date:	2003

Consulting Engagement:

Type of Matter:	Market, technology and services strategy development
Client:	Hewlett-Packard Laboratories
Services Provided:	Analyzed multiple country-specific market needs and opportunities, and proposed technology and service offerings
Date:	2003

Publications

1. Chatterjee, Sandeep and Webber, James, Developing Enterprise Web Services: An Architect's Guide (Pearson Education Korea Ltd. and Hong Reung Science Pub. Co. 2005), Korean Trans.
2. Chatterjee, Sandeep and Webber, James, Developing Enterprise Web Services: An Architect's Guide (Prentice Hall 2004).
3. Chatterjee, Sandeep and Webber, James, Developing Enterprise Web Services: An Architect's Guide (Pearson Education Singapore Pvt. Ltd. 2004), Indian Reprint.
4. Chatterjee, Sandeep, "Enterprise Technology: Web Services: The Next Revolution in IT," in *Dataquest* (March 2004).
5. Chatterjee, Sandeep, "Enterprise 2004 Trends: On A Cautious Note," *Dataquest* (Feb. 2004).
6. Chatterjee, Sandeep, "A Real-World Web Services-Based Application," *JavaBoutique* (http://javaboutique.internet.com/articles/WSApplications/realWorld3_1.html).
7. Chatterjee, Sandeep, "Write Once, Run Anywhere Web Services," *JavaBoutique* (http://javaboutique.internet.com/articles/WSApplications/realWorld2_1.html).
8. Chatterjee, Sandeep, "Developing Real World Web Services-Based Applications," *JavaBoutique* (http://javaboutique.internet.com/articles/WSApplications/).
9. Chatterjee, Sandeep, Doctoral Thesis Dissertation, "Composable System Resources As An Architecture For Networked Systems," Massachusetts Institute of Technology (2001).
10. Keckler, Stephen W., Chang, Andrew, Lee, Whay Sing, Chatterjee, Sandeep, and Dally, William J., "Concurrent Event Handling Through Multithreading," *IEEE Trans. Computers* 48(9), pages 903-916 (1999).
11. Chatterjee, Sandeep and Devadas, Srinivas, "MASC Composable Computing Infrastructure For Intelligent Environments," *Proceedings of the Industrial Electronics Conference*, pages 132-138 (1999).
12. Chatterjee, Sandeep, "SANI: A Seamless and Non-Intrusive Framework and Agent for Creating Intelligent Interactive Homes," *Second International Conference on Autonomous Agents*, pages 436-440 (1998).

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13. Chatterjee, Sandeep, "Towards A MASC Appliances-Based Educational Paradigm," *ACM Symposium on Applied Computing*, pages 112-116 (1998).
14. Chatterjee, Sandeep, "Towards Rapidly Deployable Intelligent Environments," *American Association for Artificial Intelligence Symposium on Intelligent Environments*, pages 31-36 (1998).
15. Chatterjee, Sandeep, "The ModuleC Network Architecture: A Novel Approach Of Computing Through Information Appliances," *IEEE International Symposium on Consumer Electronics* (1997).
16. Chatterjee, Sandeep, Masters Thesis, "Asynchronous Event Handling," Massachusetts Institute of Technology Technical Report (May 1997).
17. Tennenhouse, David L. and Chatterjee, Sandeep, "The First 10 Feet: The Missing Story For Encouraging User Investment In Universal Broadband Connectivity" (October 1996).
18. Chatterjee, Sandeep and Faraboschi, Paolo, "The VLIW Trace Scheduling Compiler Visual Analysis System," Hewlett-Packard Laboratories Internal Technical Report (September 1995).
19. Chatterjee, Sandeep and Donohue, Richard J., "Electron Gamma Shower Windows 2," *International Conference on Monte Carlo Simulations in Nuclear & High Energy Physics* (February 1993).

Appendix A-1

CONFIDENTIAL

Full name of the Expert: **Sandeep Chatterjee**
Address: **Experantis LLC**
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Atherton, CA 94027

Testimony through declaration, report, deposition or trial (2018-PRESENT)[1]

Case Name[2]	Case Number	Court	Date[3]
Leftsnrights, Inc. v. 33Across, Inc.	IPR2018-01480	IPR	2018
Facebook, Inc. and Instagram, LLC v. Search and Social Media Partners, LLC	IPR2018-01620 IPR2018-01622	IPR	2018
Ameranth, Inc. v. Mobo Systems, Inc.	3:12-CV-01642-JLS-NLS	Southern Dist. of California, San Diego Div.	2018
Facebook, Inc., Instagram, LLC and WhatsApp, Inc. v. Blackberry Limited	2:18-cv-01844; 2:18-cv-02693 GW(KSx) IPR2019-00516 IPR2019-00528 IPR2019-00706 IPR2019-00787 IPR2019-00899 IPR2019-00924 IPR2019-00925 IPR2019-00940 IPR2019-00941 IPR2019-00942	IPR Central Dist. of California	2018
Facebook, Inc. v. Hyper Search LLC	IPR2019-00041	IPR	2018
Touchstream Technologies, Inc. v. Vizbee, Inc.	1:17-cv-6247-PGG-KNF	Southern Dist. of New York	2018
Roger Hogan et al. v. Toyota Motor Sales, U.S.A., Inc.	30-2017-00933647-CUFR-CJC	Superior Court of the State of California,	2019

[1] Only cases where the Expert was disclosed is listed. This list does not include confidential and/or privileged consulting work that the Expert is obligated not to disclose.
[2] Underlining represents the retaining party and/or the party on whose behalf the Expert was retained.
[3] Date represents the approximate year the Expert became involved in the matter.

Case Name[2]	Case Number	Court	Date[3]
		County of Orange, Central Justice Center	
Lufthansa Technik and Certified Aviation Services, LLC v. EcoServices, LLC		Re-exam	2019
NCR Corp. v. Pendum, LLC and Burroughs, Inc.	1:16-cv-04114-SCJ	Northern Dist. of Georgia	2019
Snap, Inc. v. Blackberry Limited	IPR2019-00937 IPR2019-00938 IPR2020-00391 IPR2020-00392	IPR	2019
Rovi Guides, Inc. v. Comcast Corp. et al.	ITC Inv. No. 337-TA-1158	ITC	2019
Microsoft Corporation, Google LLC, Asustek Computer Inc., Acer Incorporated, HTC Corporation v. Mimzi, LLC	IPR2019-01516	IPR	2019
Blue Spike LLC v. DISH Network Corp.	IPR2019-01303 IPR2019-01305 IPR2019-01357 IPR2019-01358	IPR	2019
Rain Computing, Inc. v. Samsung Electronics Co., Ltd.; Samsung Electronics America, Inc.; and Samsung Research America, Inc.	1:18-cv-12639-RGS	Dist. of Massachusetts	2019
JBF Interlude 2009 Ltd. - Israel v. Quibi Holdings LLC	2:20-CV-2299-JAK	Central Dist. of California, Western Div.	2020
Warner Records, Inc., et al. v. Charter Communications, Inc.	19-cv-00874-MSK-MEH	Dist. of Colorado	2020
UMG Recordings, Inc., et al. v. Bright House Networks, LLC	8:19-cv-00710-MSS-TGW	Middle Dist. of Florida, Tampa Div.	2020
Dolby Laboratories, Inc. v. Intertrust Technologies Corporation	IPR2020-01123 IPR2020-01209 IPR2020-00665 3:19-cv-03371-EMC	IPR Northern Dist. of California, San Francisco Div.	2020

Case Name[2]	Case Number	Court	Date[3]
NexStep, Inc. v. Comcast Cable Communications, LLC	19-1031 (RGA)(SRF)	Dist. of Delaware	2020
Thaddeus Gabara v. Facebook, Inc.	IPR2021-00116 IPR2021-00117 IPR2021-00118 IPR2021-00200 IPR2021-00201	IPR	2020
USC IP Partnership, L.P. v. Facebook, Inc.	IPR2021-00033 IPR2021-00034	IPR	2020
Document Dynamics, LLC v. Xerox Corporation	20-CV-6519-EAW-MWP	Western Dist. Of New York Re-exam	2020
Cloudofchange, LLC v. NCR Corp.	WA:6:19-cv-00513-ADA	Western Dist. of Texas, Waco Div.	2020
CommVault Systems, Inc. v. Rubrik Inc.	IPR2021-00535 IPR2021-00589 IPR2021-00609	IPR	2020
Google LLC v. Express Mobile, Inc.	IPR2021-00700 IPR2021-00709 IPR2021-00710 IPR2021-00711	IPR	2021
Broadband iTV, Inc. v. AT&T Services, Inc. and AT&T Communications LLC	6:19-cv-00712 ADA	Western Dist. of Texas, Waco Div.	2021
Broadband iTV, Inc. v. DIRECTV, LLC	6:19-cv-00714 ADA	Western Dist. of Texas, Waco Div.	2021
Uber Technologies, Inc. v. AGIS Software Development LLC	IPR2021-01306 IPR2021-01307 IPR2021-01308	IPR Re-exam	2021
Samsung Electronics Co., Ltd. v. Blaze Mobile, Inc. and Michelle Fisher	IPR2021-01529 IPR2021-01530 IPR2021-01569 IPR2021-01570 IPR2021-01571	IPR	2021
Proven Networks, LLC v F5 Networks, Inc.	ITC Inv. No. 337-TA-1275	ITC	2021

Case Name[2]	Case Number	Court	Date[3]
WSOU Investments, LLC v F5 Networks, Inc.	2:20-cv-01878-BJR 2:21-cv-00123-BJR 2:21-cv-00124-BJR 2:21-cv-00125-BJR 2:21-cv-00126-BJR IPR2022-00107	Western Dist. of Washington at Seattle; IPR	2021
People.AI, Inc. v SetSail Technologies, Inc.	5:20-cv-09148-WHA	Northern Dist. of California	2021
IGT and IGT Canada Solutions ULC v Zynga Inc.	IPR2022-00223 IPR2022-00368	IPR	2021
Booking Holdings, Inc. v. Express Mobile, Inc.	IPR2022-00247 IPR2022-00248 IPR2022-00249	IPR	2021
Wapp Tech Limited Partnership v. Wells Fargo Bank, N.A.	4:21-cv-00671-ALM	Eastern Dist. of Texas, Sherman Div.	2022
Trident Holdings, Inc. v. HubSpot, Inc.	IPR2022-00907	IPR	2022
Hafeman v. LG Electronics, Inc.	6:21-cv-00696-ADA	Western Dist. of Texas, Waco Div.	2022
In re Cloudera, Inc. Securities Litigation	19CV348674	Santa Clara County Superior Court	2022
Consumeron, LLC v. Maplebear Inc. D/B/A Instacart	21-01147-LPS	Dist. of Delaware	2022
Fintiv, Inc. v. Paypal Holdings, Inc.	6:22-cv-00288-ADA	Western Dist. of Texas, Waco Div.	2022
Groove Digital, Inc. v. Jam City, Inc.	18-1331-RGA	Dist. of Delaware	2022
Lyft, Inc. v. AGIS Software Development LLC	IPR2022-00513 IPR2022-00514	IPR	2022
Apple Inc. v. Speir Technologies Ltd.	IPR2023-00542 IPR2023-00543	IPR	2022
Smart Path Connections, LLC v. Nokia Corp. et al.	2:22-cv-00296-JRG-RSP	Eastern Dist. of Texas, Marshall Div.	2023

Case Name[2]	Case Number	Court	Date[3]
In re Google Play Store Antitrust Litigation	3:21-md-02981-JD	Northern Dist. of California, San Francisco Div.	2023
Entropic Communications, LLC v Comcast Corporation et al.	2:23-cv-01048 2:23-cv-01050	Central Dist. of California, Santa Ana Div.	2023
Dynapass IP Holdings LLC v. Bank of America Corp et al.	2:22-cv-00210	Eastern Dist. of Texas, Marshall Div.	2023
BMG Rights Management LLC, et al. v. Altice USA, Inc., et al.	2:22-cv-00471	Eastern Dist. of Texas, Marshall Div.	2023
Gutierrez v. Converse, Inc.	2:23-cv-06547-KK-MAR	Central Dist. of California	2024
Google LLC v. Kove IO, Inc.		IPR	2024
Cisco Systems, Inc. v. Scale Video Coding LLC	IPR2024-01371	IPR	2024
KP Innovations 2, LLC v. Samsung Electronics Co., Ltd. et al.	IPR2025-00101	IPR	2024
Google LLC and Motorola Mobility LLC v. Multifold International Incorporated Pte. Ltd.	IPR2025-00061 IPR2025-00060 IPR2025-00059 IPR2025-00058	IPR	2024
Warner Records, Inc. et al. v. Altice USA, Inc., et al.	2:23-cv-00576	Eastern Dist. of Texas, Marshall Div.	2024
Taylor v. Google LLC	5:20-cv-07956	Northern Dist. of California	2024
Attila Csupo et al. v. Google LLC	19CV352557	Santa Clara County Superior Court	2024
Hughes v. The Neiman Marcus Group LLC	24STCV13276	Los Angeles Superior Court	2024
Heiting et al. v. I Am Beyond LLC	23STCV27729	Los Angeles Superior Court	2025

Appendix B

Pleadings / Court Filings

1 Master Complaint (Personal Injury), Social Media Cases, Judicial Council Coordination (JCCP) No. 5255 (L.A. Super. Ct. May 16, 2023)

2 Plaintiffs' First Amended Master Complaint (Local Government & School District), In Re: Social Media Adolescent Addition/Personal Injury Products Liability Litigation, MDL No. 3047 (N.D. Cal. Mar. 27, 2024), ECF No. 729

3 Plaintiffs' Second Amended Master Complaint (Personal Injury), In Re: Social Media Adolescent Addition/Personal Injury Products Liability Litigation, MDL No. 3047 (N.D. Cal. Dec. 15, 2023), ECF No. 494

4 Snap Inc.'s Amended Second Supplemental Responses and Objections to Plaintiffs' Interrogatories, Set 2, February 24, 2025

Expert Reports

5 [MDL] Opening Plaintiff Expert Report of Arvind Narayanan [Confidential] May 16, 2025

6 [MDL] Opening Plaintiff Expert Report of Brooke Istook [Highly Confidential] May 16, 2025

7 [MDL] Opening Plaintiff Expert Report of Colin Gray [Highly Confidential] May 16, 2025

8 [MDL] Opening Plaintiff Expert Report of John Chandler [Highly Confidential] May 16, 2025

9 [MDL] Opening Plaintiff Expert Report of Tim Estes May 16, 2025

10 [JCCP] Rebuttal Expert Report - Hayakawa, Krista, July 3, 2025

Deposition Transcripts / Exhibits

11 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 1

12 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 2

13 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 3

14 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 4

15 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 5

16 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 6

17 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 7

18 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 8
19 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 9
20 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 10
21 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 11
22 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 12
23 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 13
24 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 14
25 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 15
26 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 16
27 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 17
28 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 18
29 Deposition of Deborah Oshuntola, Feb. 4, 2025, Exhibit 19
30 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 1
31 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 2
32 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 3
33 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 4
34 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 5
35 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 6
36 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 7
37 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 8
38 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 9
39 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 10
40 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 10A
41 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 11
42 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 12
43 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 13
44 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 14
45 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 15
46 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 16
47 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 17
48 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 18
49 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 19

50 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 20
51 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 21
52 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 22
53 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 23
54 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 24
55 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 25
56 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 26
57 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 27
58 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 28
59 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 29
60 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 30
61 Deposition of Evan Spiegel, Apr. 11, 2025, Exhibit 31
62 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 1
63 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 2
64 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 3
65 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 4
66 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 5
67 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 8
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69 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 10
70 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 11
71 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 12
72 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 13
73 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 14
74 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 15
75 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 16
76 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 17
77 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 18
78 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 19
79 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 20
80 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 21
81 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 22

82 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 23
83 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 24
84 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 25
85 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 26
86 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 27
87 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 28
88 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 29
89 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 30
90 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 31
91 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 32
92 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 33
93 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 6
94 Deposition of Jack Brody, Feb. 5, 2025, Exhibit 7
95 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 1
96 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 2
97 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 3
98 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 4
99 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 5
100 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 6
101 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 7
102 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 8
103 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 9
104 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 10
105 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 11
106 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 12
107 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 13
108 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 14
109 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 15
110 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 16
111 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 17
112 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 18
113 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 19

114 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 20
115 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 21
116 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 22
117 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 23
118 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 24
119 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 25
120 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 26
121 Deposition of Jacob Andreou, Apr. 11, 2025, Exhibit 27
122 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 1
123 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 2
124 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 3
125 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 4
126 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 5
127 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 6
128 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 7
129 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 8
130 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 9
131 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 10
132 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 11
133 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 12
134 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 13
135 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 15
136 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 16
137 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 17
138 Deposition of Jeb Boniakowski, Mar. 20, 2025, Exhibit 18
139 Deposition of Josh Siegel, Mar. 20, 2025, Exhibit 45
140 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 1
141 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 2
142 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 3
143 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 4
144 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 5
145 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 6

146 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 7
147 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 8
148 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 9
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150 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 11
151 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 12
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153 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 14
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156 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 17
157 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 18
158 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 19
159 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 20
160 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 21
161 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 22
162 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 23
163 Deposition of Mariia Apanovych, Mar. 28, 2025, Exhibit 24
164 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 1
165 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 2
166 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 3
167 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 4
168 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 5
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170 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 7
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172 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 9
173 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 10
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179 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 16
180 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 17
181 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 18
182 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 19
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184 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 21
185 Deposition of Michael Weissinger, Dec. 18, 2024, Exhibit 22
186 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 1
187 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 2
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189 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 4
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194 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 9
195 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 10
196 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 11
197 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 12
198 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 13
199 Deposition of Nathan Boyd, Mar. 28, 2025, Exhibit 14
200 Deposition Transcript of Abby Tran, Feb. 26, 2025
201 Deposition Transcript of Althea Tupper, Nov. 14, 2024
202 Deposition Transcript of David Boyle, Apr. 2, 2025
203 Deposition Transcript of Deborah Oshuntola, Feb. 4, 2025
204 Deposition Transcript of Evan Spiegel, Apr. 11, 2025
205 Deposition Transcript of Jack Brody, Feb. 5, 2025
206 Deposition Transcript of Jacob Andreou, Apr. 11, 2025
207 Deposition Transcript of Jeb Boniakowski, Mar. 20, 2025
208 Deposition Transcript of Jeremy Voss, Apr. 4, 2025
209 Deposition Transcript of Mariia Apanovych, Mar. 28, 2025

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